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A METHODOLOGICAL STUDY OF FREUDIAN THEORY: III. NARCISSISM, BISEXUALITY AND THE DUAL INSTINCT THEORY

ABRAM KARDINER, M.D.,[1] AARON KARUSH, M.D.[1] AND LIONEL OVESEY, M.D.[1]

There were two considerations of especial significance among those which led Freud to develop the concept of narcissism more fully. One was the defection of his close associates, Jung (6, p. 37) and Adler (6, p. 49), who were dissatisfied with certain aspects of the libido theory. Painful as these defections were to Freud, they impelled him to deal with the criticisms raised and to make important modifications in his theory. Freud had already recognized in the Schreber case (7) that the schizophrenic withdrew not only his erotic cathexes from the outer world, but his non-erotic "ego interest" as well. Jung used this apparent extension of the libido beyond its original sexual significance as a pretext to break with psychoanalytic theory and to identify libido with "life force," a single energy for both sexual and non-sexual purposes. From this point Jung launched into an uncharted mysticism that owed no responsibility to empiricism. He assumed that man was born with fixed instinctual and developmental tendencies, fixed characterological types (archetypes), and inherited ancestral memories. If true, this would have proved a hopeless handicap to human adaptation. Jung's essential criticism, however, did have a salutary effect upon Freud. It hastened Freud's attempts to formulate the concept of narcissism in which he defined the interaction between the libido and the ego instinct of self-preservation.

[1] The Psychoanalytic Clinic for Training and Research, Department of Psychiatry, College of Physicians and Surgeons, Columbia University, New York, N.Y.

Adler's contribution in our opinion was far more important than Jung's. He tried to reinstate the ego, which had been lost in the libido theory, by re-introducing the human environment with its values and directives. These, he said, were the sources of neurotic conflict. We do not have the time here to go into the subject of Adler in any detail. We merely want to indicate that although his effort to reinstate the ego to a governing position in adaptation was legitimate, he threw the baby out with the bath water. That is to say he destroyed Freud's hard-won victories in discovering the nature of the intrapsychic apparatus for adaptation and substituted for it a social directive, the origin of which he did not know. It was an uneven exchange, and Adler's chief merit was that he stimulated Freud to retrieve the lost ego, but in a way more compatible with the basic concepts of his earlier work. Adler's influence, therefore, gave additional impetus to the gradual development of an ego psychology within the libidinal frame of reference.

The other consideration that led to the development of the concept of narcissism was the high incidence of therapeutic failure in the clinical application of the libido theory. Many neurotic patients failed to improve despite the most meticulous analyses of their Oedipal conflicts and the dispositions of their libidinal energies. Freud speculated that these patients, with their limited susceptibility to therapeutic influence, had something in common with the totally refractory schizophrenics. He, therefore, sought an explanation for therapeutic fail-

ure in both cases through a more careful characterization of the schizophrenic's withdrawal from the outer world. Freud attributed the lack of success with schizophrenic patients to their inability to form a transference relationship with the therapist; that is, the patient could not transfer libido from himself to the therapist and make of the therapist a love-object. In such cases analysis was deemed impossible because the transformations of the libido and its various modes of expression could not be observed and charted. This inability to invest the analyst with libidinal energy seemed to Freud a consequence of a prior withdrawal of libido from external objects. He thereby reduced the whole problem of schizophrenia to a general detachment of libidinal cathexes. This raised questions about the fate of the "freed" energy. Freud advanced the hypothesis that it was invested in the ego itself, which thus became its own love-object. This investment of the ego with libido he called *narcissism*.

The characteristic clinical picture of schizophrenia, however, could not be explained solely by the detachment of libidinal cathexes, since the patient withdrew from non-sexual objects as well as sexual. Freud translated this clinical observation into energic terms and proposed that narcissism consisted of the investment of the ego by the energies of both the sexual instinct and the ego instinct of self-preservation. Furthermore, it seemed to Freud that in the schizophrenic the narcissistic state was "an exaggeration and plainer manifestation of a condition that had already existed previously" (6). He concluded from this that "the narcissism which arises when libidinal cathexes are called in away from external objects must be conceived of as a secondary form, superimposed upon a primary one that is obscured by manifold influences" (6, p. 32). For such an assumption of primary narcissism he advanced as evidence the omnipotent and magical thinking of primitive peoples and children:

"In the former we find characteristics which, if they occurred singly, might be put down to megalomania: an over-estimation of the power of wishes and mental processes, the 'omnipotence of thoughts,' a belief in the magical virtue of words, and a method of dealing with the outer world—the art of 'magic'—which appears to be a logical application of these grandiose premises. In the child of our own day, whose development is much more obscure to us, we expect a perfectly analogous attitude towards the external world. Thus we form a conception of an original libidinal cathexis of the ego, part of which cathexis is later yielded up to objects, but which fundamentally persists and is related to the object-cathexes much as the body of a protoplasmic animalcule is related to the pseudopodia which it puts out. In our researches, taking, as they did, neurotic symptoms for their starting-point, this part of the disposition of the libido necessarily remained hidden from us at the outset. We were struck only by the emanations from this libido—the object-cathexes, which can be put forth and drawn back again. We perceive, also, broadly speaking, a certain reciprocity between ego-libido and object-libido. The more that is absorbed by the one, the more improverished does the other become. The highest form of development of which object-libido is capable is seen in the state of being in love, when the subject seems to yield up his whole personality in favour of object-cathexis; while we have the opposite condition in the paranoiac's phantasy (or self-perception) of the 'end of the world.' Finally, with reference to the differentiation of the energies operating in the mind, we infer that at first in the narcissistic state they exist side by side and that our analysis is not a fine enough instrument to distinguish them; only where there is object-cathexis is it possible to discriminate a sexual energy —the libido—from an energy pertaining to the ego-instincts" (6, p. 32–33).

The concept of narcissism had far-reac-

ing effects on psychoanalysis. The study of the ego instinct now became essential to the understanding of behavior. Here again, as with the sexual instinct, Freud made use of energic concepts and attempted to construct a psychology of the ego within the instinctual frame of reference. Such a psychology required a means of identifying the energic component of the ego instinct in order to trace its distribution. The hypothesis of narcissism and ego-libido gave him a starting point from which future manifestations of ego disturbance could be charted. Having assumed the first libidinal cathexis to be the ego itself, he could now trace the transformation of this ego-libido into object-libido through the clinical study of object-relationships. He described the emergence of object-choice from primary narcissism in the following way:

> "... the choice of object, the step forward in the development of the libido which comes after the narcissistic stage, can proceed according to two types. These are: either *the narcissistic type*, according to which, in place of the ego itself, someone as nearly as possible resembling it is adopted as an object; or *the anaclitic type* (Anlehnungstypus)[2] in which those persons who became prized on account of the satisfactions they rendered to the primal needs in life are chosen as objects by the libido also" (3).

This division into two types of object-choice provided Freud with an explanation for the distinction between the transference neuroses (psychoneuroses) and the narcissistic neuroses (schizophrenia). Persons disposed toward an anaclitic selection of objects were capable of love for others, could establish a transference, and, therefore, were amenable to psychoanalytic treatment. Those disposed toward a narcissistic object-choice loved only themselves, could not establish a transference, and, therefore, were refractory to psychoanalytic treatment. Freud attributed the direction of object-choice to the dispositional points of fixation of the libido. In the narcissistic neuroses the main fixation point was the stage of primary narcissism when only the ego was invested with libido; in the transference neuroses the main fixation points were at later stages of development after the libido had begun to seek external objects. However, Freud recognized from his clinical material that even those persons who developed a transference relationship retained some measure of primary narcissism. This observation enabled him to attribute therapeutic failures in such patients to the degree of narcissistic fixation of the libido. In other words, psychoneurotics, like schizophrenics, failed to get well because they were "too narcissistic."

It is true that the concept of narcissism reinstated the ego that was temporarily lost in the libido theory, but again, Freud's preoccupation with energy and its distribution obscured the adaptational significance of the phenomena that he observed. It wasn't that he did not offer adaptational explanations for these phenomena. He did, and in so doing, laid down the basis for an adaptational theory of ego functions. However, his insistence that the ultimate explanations be energic once more created the familiar psychoanalytic tautology. The concept of narcissism assumed that the libido flowed from the self to other objects, and it explained object relationships with this assumption. It assumed that libido could be withdrawn, then explained the phenomena created by the withdrawal by concluding that libido was withdrawn. The use of such circular reasoning made the hypothesis about narcissism a dead weight which distracted attention from the real problem, the adaptive functions of the ego. It interfered with conceptualization and encouraged efforts to resolve theoretical contradictions by such semantic devices as "neutralization," "desexualization," "fusion," and "defusion." It eventually led to Freud's unrestrained journey into philo-

[2] This name refers to the *dependence* of the sexual instincts on the self-preservative instincts for their first object, *i.e.*, the suckling mother.

sophical speculation about life and death instincts.

A large body of knowledge about ego functions has been encompassed by the concept of narcissism. It does not require an energic assumption, however, to give this concept a scientifically useful meaning. Let us see, therefore, what narcissism looks like without its energic trappings. In adaptational terms the notion of primary narcissism is simply an assumption about the self-concept of the infant in the first months of life. We assume that the infant is unaware of his utter dependence on the mother and, indeed, of her objective existence. He apparently perceives the mother, and all other external objects as physical extensions of his own body. Every need felt by him is translated into gratification by the mother's protective love and care as if by magic. Such a state of affairs fosters the anticipation that the magical quality of the experience will always be repeated. It is this anticipation which creates the illusion of omnipotence ("primary narcissism") that we attribute to the infant. In time, with growth, this perception normally becomes more realistic. The child differentiates his own person from that of the mother, relinquishes the illusion of his own omnipotence, and delegates it instead to her. Later, as he moves toward adulthood, he gradually accepts a greater reliance upon his own capacities as the main source of his security. No person, however, at least unconsciously, completely gives up his longing to enjoy magical dependence upon the delegated omnipotence of the mother. The extent to which reliance upon magical dependency in the adult takes precedence over self-sufficiency is a measure of immaturity. Such persons, in later life, may react to any failure or threat of failure in adaptive performance with the unconscious wish for a magical remedy. A regression may then occur either to the earliest infantile self-image, in which objects are merely extensions of the self ("secondary narcissism"), or to the later stage of delegated omnipotence, where differentiation from objects has already taken place.

It is our belief that the subsequent development of object-choice cannot be understood in terms of an instinctual organization and its hypothetical energies. If it is not a libidinal cathexis, what then forces the ego toward a "narcissistic" rather than toward an "anaclitic" object? The explanation follows logically from our description of the interaction between the infant and the mother. The growing child relates to objects in accordance with the prevailing self-image. This self-image is, in turn, the resultant of infantile maturation and the mother's readiness to give security and prevent painful frustration. Pathological attitudes on the part of the mother toward the needs of the child can prevent the orderly progression in the normal development of the infantile self. Chronic frustration undermines the trust that the power of a significant object will be an instrument of safety and pleasure, rather than harm and pain. Narcissistic object-choice implies predominant distrust of objects and perpetuates emotional isolation from other human beings. Anaclitic object-choice implies predominant hope of loving care from persons in the outer world and hence lays the basis for the development of tender affectivity in all subsequent relationships. Each is a matter of perception shaped by infantile experience.

The concept of narcissism was also used by Freud to expand his earlier theory of homosexuality. He had already postulated a normal period of homosexual libidinal cathexis which lay between auto-erotism and heterosexual object-attachment. This idea was based on a concept of constitutional bisexuality which held that each individual was constitutionally endowed with both male and female psychosexual attributes. The role of narcissism in the establishment of the homosexual object-choice was described by Freud as follows:

"There comes a time in the develop-

ment of the individual at which he unifies his sexual instincts (which have hitherto been engaged in auto-erotic activities) in order to obtain a love-object; and he begins by taking himself, his own body, as his love-object, and only subsequently proceeds from this to the choice of some person other than himself as his object. This half-way phase between auto-erotism and object-love may perhaps be indispensible to the normal course of life; but it appears that many people linger unusually long in this condition, and that many of its features are carried over by them into the later stages of their development. The point of central interest in the self which is thus chosen as a love-object may already be the genitals. The line of development then leads on to the choice of an outer object with similar genitals—that is, to homosexual object-choice—and thence to heterosexuality. Persons who are manifest homosexuals in later life have, it may be presumed, never emancipated themselves from the binding condition that the object of their choice must possess genitals like their own . . ." (7, p. 446).

Thus, narcissism became a necessary accompaniment of homosexuality and the degree of narcissistic fixation in such a disorder was determined by the inherent strength of the homosexual component in the bisexual constitution. Narcissism could now account for the resistance of homosexuals to psychoanalytic treatment just as it did for the resistance of schizophrenics and refractory psychoneurotics.

The concept of bisexuality was used by Freud to explain many aspects of behavior in both men and women that went far beyond simple homosexuality. He believed that one of the antitheses that governed mental life was the polarity *active-passive* (4). Thus, in the child the opposites for behavior were at first activity as opposed to passivity, but without any comprehension of the difference between the sexes. As the child discovered the distinction between male and female genitals, activity and passivity became equated with masculinity and femininity. The relative strength of the masculine and feminine components in the bisexual constitution determined whether a person became primarily active-masculine or passive-feminine in his subsequent behavior.

In the male the passive-feminine component aroused the desire to be treated like a woman by the father. This identification with the mother comprised the inverted or negative Oedipus complex and could be achieved only at the cost of castration. Those males in whom the passive-feminine component predominated willingly accepted the castration in fantasy and became overt homosexuals. Those with a stronger masculine component, however, protected themselves from castration by repression of the passive-feminine wish. The unconscious persistence of this wish came to be regarded as unconscious or latent homosexuality.

This theory of latent homosexuality in males based on a bisexual constitution has assumed great importance in psychoanalysis because it is used to account not only for homosexuality, but also for failures in non-sexual assertion and aggression. Such failures are attributed to the inherent strength of the passive-feminine identification. The anxiety that accompanies these failures in assertion and aggression is, therefore, in Freudian theory always a castration anxiety incident to the repressed homosexual wish.

In a similar manner, as he did with men, Freud attributed many aspects of behavior in women to a bisexual constitution (5). It is not necessary for our purposes to explore in detail all the ramifications of his theories about women. Suffice it to say that in his belief the normal woman successfully sublimated her masculine strivings and accepted the passive, submissive role imposed by the feminine component. Those women in whom the masculine component was too

strong suffered from unresolved penis-envy and were unable to accept their femininity. They developed either a masculinity-complex, characterized by "masculine" aggression, or they became homosexuals. In addition, Freud considered many other traits, such as narcissism, vanity, and a weak super-ego, to be inherent expressions of a "feminine character."

The clinical observations upon which the concept of constitutional bisexuality is based are clear enough and easily verified. The concept is supposed to have biological validity because the urogenital systems of the two sexes derive from a common embryonic origin. However, all that one can really say is that the zygote has the potential to develop *either* as male *or* female, and once this direction is chosen, the fate of the person's gender, whether masculine or feminine, is irrevocably settled. Freud made an arbitrary leap from the embryological to the psychological and assumed that the ambiguous sexuality of the zygote justified the hypothesis of a permanent fusion in the psyche of so-called male and female attributes. We see no factual justification for such a hypothesis (17). Furthermore, the concept of constitutional bisexuality does not really provide a definitive explanation of homosexuality, nor of "masculinity" and femininity." It merely uses another assumption to bolster the prior assumption that all behavior has a predetermined instinctual basis. The concept cannot be validated clinically except by referring to the very phenomena it is supposed to cause. We need hardly point out again the tautological reasoning involved in justifying an etiological hypothesis by citing as evidence its assumed consequences.

The psychosexual attributes classified by Freud as constitutionally masculine or feminine can be explained as adaptational responses to environment without recourse to inherited predisposition. These phenomena can be broken down into two distinctive categories. The first, the active-passive polarity, does not derive either from a "sexual instinct" or a "bisexual constitution;" in fact, this polarity has nothing to do with sexuality as such, nor even with gender, but is really an expression of the capacity for assertion and aggression in any area of behavior. The second, homosexuality, refers to sexual phenomena, which on closer study, prove to be the arousal patterns necessary for sexual gratification. Freud assumed that these arousal patterns were constitutional, but actually, in man, only the orgastic reflex is a built-in mechanism which cannot be influenced in the course of ontogenetic development. We do not know whether the arousal patterns which lead to orgasm are inborn or not, but we do know that they can be readily influenced by cultural directives and individual experience.

Our first task, then, in criticizing the concept of constitutional bisexuality is to account adaptationally for inhibitions of assertion and aggression. It would be helpful here to define these terms. Assertion is a generic term that encompasses all behavior, with or without hostile intent, designed to gratify a need. Aggression is a specific form of assertion that has hostile intent toward an impeding object and seeks to injure or destroy it. How do inhibitions of assertion and aggression arise? They are the products of intimidation in any area of behavior, including the sexual, which is subject to the disciplinary control of parents. The function of any inhibition is always defensive. It protects against punishment and loss of love (dependency), and hence insures survival. Inhibitions, however, do not stay confined to the behavior area in which they were originally laid down. Unfortunately, the coincident lack of confidence and the drop in self-esteem tend to spread to other activities, and new inhibitions appear. It makes no difference, therefore, whether the initial focus of inhibition is sexual or non-sexual; ultimately, function in both areas will be impaired by fears of harm or danger. The common denominator of these fears is the

unconscious distortion of the meaning of assertion. In such persons all assertion is symbolically equated with destructive aggression that carries with it the threat of equally violent retaliation.

Let us turn now to the problem of homosexuality in the male and define the choice of object in adaptational terms. Here, the starting point is the intimidation of infantile sexuality. Excessive parental discipline confronts the child with the fantasied threat of castration, which may be extended to imply total annihilation and death. This threat may come from the father as a retaliation for Oedipal strivings toward the mother, or it may come from a punitive mother in the form of a vagina dentata fantasy. The child responds to these threats with the emergency emotion of fear, which may be so great as to force a partial or complete withdrawal from sexual activity. Later, as the child grows, any sexual behavior will revive the earlier fear, and an inhibition of normal sexual behavior is established. Such an inhibition may result in a homosexual choice of object. The person reacts with such intense fear in relation to a heterosexual object that he fails in heterosexual performance. His sexual need, however, continues unabated and is diverted to a "safer" object. This object is a homosexual one, and it derives its added safety from the reassuring presence of the penis, which allays the homosexual's anxiety. Homosexuality, in this light, is a deviant form of sexual adaptation into which the person is forced by the injection of fear into the normal sexual function. It is a symptom of a neurosis, a defense against castration anxiety by the phobic avoidance of the female genital. The homosexual solution is only one of several solutions available to patients who suffer from this phobia. Other patients may retain their heterosexuality but make use of such protective devices as impotence, fetishism, exhibitionism, and so on.

The psychodynamics of hemosexuality in the female are essentially the reverse of those found in the male. The little girl frequently invokes the castration fantasy to explain her lack of a penis. She unconsciously believes that she once had a penis and it was cut off by the mother as a punishment for her sexual interest in the father. Any heterosexual object to whom she may later turn revives the expectation that the castration will be repeated. Furthermore, the male's penis inevitably is regarded as a dangerous weapon against which, in view of her own castration, she is defenseless. Heterosexual intercourse, therefore, not only invites retaliatory castration by the mother, but also exposes the woman to injury by the male genital. The homosexual woman, therefore, phobically avoids the male genital and seeks sexual satisfaction with another woman. Her solution is the counterpart of that sought by the homosexual male. Instead of being reassured by the presence of the penis in the sexual object, she is reassured by its absence.

Freud's assumption of constitutional passivity in the male homosexual can now be corrected within our adaptational framework. There is no such thing as a constitutional relationship between homosexuality and so-called passivity. There is a relationship, but it is derived purely adaptationally from the spread of inhibition from one function to another. The underlying problem, as we have shown, is a failure in assertion. The homosexual who has been intimidated in the sexual area, therefore, frequently suffers from inhibitions in the non-sexual areas as well. The extent of the inhibition of non-sexual assertion varies in different cases. To say as does Freud that masculine is active and feminine is passive just does not hold up in clinical practice. The fact is, using Freud's own terms, there are active male homosexuals and there are passive male homosexuals, and for that matter, there are also active female homosexuals and passive female homosexuals. Translated adaptationally these descriptive terms mean only that some homosexuals, irrespective of gen-

der, are more assertive than others. The specific pattern of assertion in any person, homosexual or otherwise, is simply a composite of altered perceptions and actions designed both to repair the damage caused by early intimidation and to gain mastery over a threatening environment. The integration of assertion mirrors the extent of this childhood intimidation, not ancestral inheritance of a bisexual disposition.

The most striking distortion of clinical data produced by the concept of constitutional bisexuality lies in the motivational significance given to "latent homosexuality" in the male. This formulation is used to cover up a multitude of processes, both sexual and non-sexual, all of which, however, are explained as unconscious manifestations of a homosexual instinct. These processes all give rise to anxieties about being homosexual, but adaptationally the great majority of them have nothing to do with true homosexuality. Such anxieties can be broken down into three motivational components: sexual, dependency, and power. The sexual component is the only one of these three that seeks sexual gratification as its motivational goal. The homosexual wish can be called latent, whether conscious or unconscious, as long as it is not overtly carried out, and, strictly speaking, this is the only constellation that warrants the term latent homosexuality. The dependency and power components, however, as denoted by their names, seek completely different non-sexual goals, but make use of the genital apparatus to achieve them. These two motivations make their appearance at a time of self-assertive crisis precipitated by a failure in the masculine role in any area of behavior—sexual, social, or vocational. In such a crisis, the male may unconsciously represent his weakness through a symbolic equation: I am a failure as a man = I am castrated = I am a woman = I am a homosexual. The ideas in this equation are derived from social directives that delineate, but in a prejudicial way, the relative status of men as opposed to women. The equation is a caricature of the social demand that every male fulfill certain "masculine" requirements and of the social judgment that "femininity" and homosexuality are disgusting failures for which a man must forfeit all respect from his fellows. Each idea in this equation, therefore, reflects a social value judgment.

Any man who fails in the masculine role, then, may symbolically conceive of himself as homosexual and hence develop an anxiety about being homosexual. Such men inevitably perceive competition with other men as violent struggles for power in which the weaker man is castrated and reduced to the "degraded" role of a woman. For this reason, the anxiety is frequently dramatized as a paranoid expectation of homosexual assault, usually in the form of anal rape. The failure gives rise, furthermore, to dependency strivings that take the form of magical reparative fantasies of oral or anal incorporation of a stronger man's penis. By drawing on the donor's strength in this way, the weaker man hopes to repair his castration, ward off homosexual assaults, undo his failures in the masculine role, and guarantee successful performance in the future. This maneuver is doomed not only because it is magical, and so cannot succeed in any case, but also because the fantasied act of incorporation is misinterpreted by the patient as truly homosexual in its motivation and, paradoxically, serves only to perpetuate the very anxiety it was designed to alleviate.

It is clear, therefore, that anxieties about being homosexual need not be motivated by the erotic desire for homosexual gratification, but frequently are symbolic reflections of a failure in masculine aspiration, a competitive defeat in a power struggle, and a fantasy of magical repair by incorporation of the penis. These anxieties are more accurately described as "pseudohomosexual" (12, 14, 15); the term "homosexual" should be reserved for those anxieties that stem from a purely sexual motivation. Such a distinction underscores our position that the

theory of constitutional bisexuality obscures the adaptive significance of both homosexual and pseudohomosexual phenomena.

It is in psychoanalytic therapy that our emphasis on learned attitudes as against constitutional determinism has its primary importance. It is here, particularly, that the classical constitutional approach can do great damage. The interpretation of overt homosexuality as an expression of inherent bisexuality is discouraging enough to a homosexual patient, but to explain dependency and power strivings to a heterosexual patient on the same basis can be catastrophic. How can we expect a human being to come to terms with assumed innate tendencies which cannot be altered and to accept a permanent deflation of his self-esteem? Worse yet, he is asked to make this sacrifice for tendencies that he does not even have. The greatest damage wrought by such an interpretation, therefore, is that it directs the patients' attention to the wrong phenomena. The true problem lies in the integrative failure of self-assertion, not in homosexuality.

The Freudian concept of a feminine character derived from the feminine component of a bisexual constitution suffers from the same defects that are to be found in his psychology of men. Here, once more, Freud attributed to genetic predisposition what, in reality, were the consequences of an interaction between women and the social institutions of the male-oriented culture in which they lived. He never satisfactorily developed his concepts about women and they have been subjected to an exhaustive critical reappraisal by other authors (10, 13, 18, 19, 20). Without repeating their arguments against the concept of a fixed universal feminine character, we need note only that in our society the position of women is devalued. The social order is so arranged that status accrues to men solely by virtue of the fact that they are men. The polarities of masculinity and femininity are identified respectively with positive and negative value judgments. Masculinity represents strength, dominance, superiority; femininity represents weakness, submissiveness, inferiority. The former is equated with success; the latter with failure. It is true that these values are cultural stereotypes that express primarily the historical prejudices of the men in the culture. However, it would be safe to say that men and women alike make use of them in appraising each other's behavior. Each of the so-called feminine character traits can be explained as the learned product of experience, an adaptational response of women to these institutional pressures.

The next great revision of Freudian theory after the concept of narcissism took place in 1920 with the publication of *Beyond the Pleasure Principle* (2). Hitherto, Freud had divided instincts into two groups: the sexual instinct, which was race-preservative, and the ego instinct, which was self-preservative. The concept of narcissism had established that both instincts derived their driving energies from the libido. The two principles that governed the activities of the instincts were the pain-pleasure principle and the reality principle. Under the influence of the pain-pleasure principle the end goal of all behavior was held to be the pursuit of pleasure and the avoidance of pain. The pleasure goal of the sexual instinct was destined to be brought under the control of the instinct of the ego for self-preservation. This supremacy of the reality principle, however, was established "without giving up the intention of ultimately attaining pleasure" (2, p. 5), although it enforced postponement of satisfaction and even "temporary endurance of pain on the long and circuitous road to pleasure" (2, p. 5).

Freud recognized that this theory failed to account for certain clinical contradictions of the pain-pleasure principle. There were numerous instances in which pain alone and not pleasure seemed to be the apparent goal of behavior. The insistent repetition of previously repressed painful experiences in the

course of therapy, the repetition of catastrophic dreams in patients with traumatic neuroses, and the repetitive reenactment of painful experiences in the games of children could not be harmonized with the thesis that pleasure was the ultimate objective of all behavior. On the basis of these observations Freud decided that there was an innate force, the *repetition-compulsion*, which was a fundamental property of all instincts. He, therefore, concluded that behavior directed toward painful ends was a manifestation of a repetition-compulsion that went *beyond the pleasure principle*. Just as pleasure-seeking was the goal of the sexual instinct, the compulsion to repeat painful experiences was the goal of another instinctual drive which he called the death instinct (Thanatos) or the instinct of destruction. Opposed to this death instinct were the libidinous drives, the sexual instinct and the ego instinct of self-preservation, which Freud now grouped together as *Eros*, or the life instinct.

The new dual instinct theory focused attention upon the problem of aggression. We can better understand how Freud dealt with this problem if we review the steps that brought aggression into the framework of the libido theory. The psychoneuroses were first believed to arise from a conflict between the "sexual instincts, which are directed toward an object, and other instincts provisionally described as 'ego instincts.' Among the latter those which subserve the self-preservation of the individual had the first claim for recognition" (2, p. 64). The ego, therefore, was considered to be "a repressing, censoring agency, capable of constituting defenses and reaction-formations." Freud then decided that the reduction of "the libido concept down to the energy of the sexual instinct as directed to the object" (2, p. 65) was incorrect. Libido was regularly withdrawn from the object and directed toward the ego which was also, therefore, one of the sexual objects. This "narcissistic" libido which remained attached to the ego was "the expression of the energy of sexual instincts in the analytical sense which now had to be identified with the instincts of self-preservation" . . . (2, p. 66). With this new conception of the ego instinct of self-preservation, embodied in the concept of narcissism, Freud could no longer distinguish sharply between the ego life-preserving instincts and the sexual instincts. All instincts thus seemed to be libidinous. The discovery of the repetition-compulsion and the hypothesis of the "non-libidinous" death instinct created a theoretical dilemma which Freud met with the suggestion that this instinct, too, must exist within the ego in a special state of fusion with the libidinous ego instincts. To demonstrate an example of a death instinct Freud drew attention to the familiar polarity of love (tenderness) and hate (aggression) displayed in object-love. Object-aggression had been considered evidence of a sadistic component of the sexual instinct. "But how," asked Freud, "is one to derive the sadistic impulse which aims at the injury of the object from the life-sustaining Eros!" (2, p. 69). The paradox could be resolved only if "sadism is properly a death-instinct which is driven apart from the ego by the influence of the narcissistic libido so that it becomes manifest only in reference to the object." Masochism could then be considered simply the "recoil of sadism on to the ego itself" (2, p. 70). Sadism and masochism could exist as pure aggression, or in combination with the sexual instinct, could become erotized and put in the service of sexual function. The new instinct theory, therefore, established aggression, whether toward objects or the ego itself, as a representation of the death-instinct. Furthermore, the instinct of aggression was considered one of the instincts of the ego and its manifestations were displayed in aggressive object-relationships.

This final revision of Freud's instinct theory was to become the cornerstone of a new ego psychology (8). It established the instinct of aggression as a motivating force

that could undergo repression and cause neuroses which hitherto had been conceived as expressions of the sexual instinct and the libidinous ego instincts (narcissism). The study of the adaptive responses of the ego, however, remained bound to an instinctual frame of reference, the struggle between the libidinous life instincts of sex and self-preservation and the non-libidinous death instinct of aggression.

The dual instinct theory was not only an attempt to correct a contradiction in the libido theory, but was also Freud's final effort to define the ultimate nature of things. The effort failed because he attempted to solve the problem of libido versus non-erotic aggression by the verbal contrivance of calling one life instinct and the other death instinct. The new formulation existed on a level of abstraction so far removed from clinical observation as to have no more practical validity than the common theological generalizations about Good and Evil. The life and death instincts were endowed with anthropomorphic attributes. They were engaged in a constant struggle over which man, himself, seemed to have no control. Here, again, Freud erroneously attributed properties to "instinct" rather than to the organism as a whole. The only thing the organism could do was to stand by passively while life and death instincts raged against each other for dominance. The new theory was only another manifestation of the unworkability of concepts founded on an instinctual principle.

The same shortcoming is to be found in the concept of "repetition-compulsion." Let us examine this concept from the point of view of the clinical observations on which it is based: the repetitive catastrophic dreams in traumatic neuroses, the repetition of painful experiences in the transference, and the repetitive reenactment of painful experiences in the play of children. These observations are amenable to treatment with concepts that permit more insightful exploration than does a descriptive term that gives a name to a phenomenon and at the same time, by virtue of that name, arbitrarily assumes it to be a property of instinct.

Freud claimed that the repetitive dreams in traumatic neuroses represented a breakthrough of the defense against painful stimuli (Reitzschutz) and were attempts to dissipate the effects of this breakthrough by repetition of the original traumatic event. This explanation is very like the old abreaction theory. It should be noted that Freud disregarded the explanations of Abraham, Ferenczi and Jones, which were based on the libido theory. He did not subscribe to the idea that Oedipal guilt, castration fear, or pregenital regression accounted for the symptoms, but instead called upon an entirely new principle—a breakthrough of a defense against painful stimuli. This explanation recognizes an etiological factor, but does not tell us why the breakthrough occured, or what its consequences were. In our opinion, using Freud's own terminology, the breakthrough of the defense against stimuli permanently disrupts the effective mechanisms of adaptation. The cause of this disruption is the traumatic event which momentarily strips the subject of his means for mastering the outer world. The latter takes on a threatening aspect and this altered perception persists after the trauma has long passed (9).

The use of a "death instinct" to account for the consequences of the traumatic event is contradicted by the clinical data. These consequences can be defined only in terms of a system of action, behind which the instinct of self-preservation, if there is such a unitary instinct, still operates very effectively. The anxiety the subject has is an indication that he feels threatened. This anxiety is omnipresent. What is injured, broken up, or destroyed are the executive implements that protect the person up to the moment of trauma. The world has become a dangerous place precisely because the means for dealing with it have become

impounded. In the traumatic experience these implements are really inadequate, fail in their protective function, and from then on are perceived as useless. Once the person has been damaged in this way, he must institute a new type of adaptation in place of the one which has been lost. He makes use of a defective executive apparatus, but except in those instances where there are crude inhibitions, such as blindness, deafness, paraplegias, periodic loss of consciousness, etc., the subject is unaware that his adaptive capacity has been destroyed.

In the light of these considerations, the "repetition compulsion" in the traumatic neuroses turns out not to be a property of instinct at all, but a repetitive attempt to operate with a defective system of executive action. It might be said that the "mechanism" used here is one of ego contraction. It is therefore a protective inhibition of function, or the impounding of a once effective integration. The compulsion to repeat is a universal feature of human adaptation regardless of whether the executive function involved is effective or impaired. Once perceptions are organized and lead to actions which provide security, real or illusory, the perceptual executive apparatus so established tends to be used automatically again and again. It is a matter of learned behavior and economy of effort, not of instinctual inevitability.

By the same token the "repetition" in the transference is also no mysterious property of an instinct. The patient structures his relations to the therapist in accordance with his past experience. Thus, he identifies the therapist with a parent because he perceives his relations to the therapist in terms of his infantile needs and expectations. The infantile patterns of dependency, which once served the patient well, are now automatically called into play to force the therapist to provide the desired love and protection. The sum total of such systems of perception and action in his relations to others gives the individual his specific character. The basis for the particular style of structuring the outer world lies, therefore, in the organizing and synthetizing functions of the ego.

Nor do we require an instinctual hypothesis to explain the reenactment of painful experiences in the play of children. Thus, in the example cited by Freud, a child, who has been abandoned by his mother, plays a game of throwing his doll under the bed and then retrieving it (2). Freud attributed the child's behavior to the repetition-compulsion which compelled him to reenact the painful trauma of separation. Such repetitive phenomena, it seems to us, are far better understood in terms of adaptation. The game is really a manifestation of wishful, magical thinking as a means to mastery. The play differs strikingly from the actual experience in that the ending is changed. Mother, in real life, may leave and her departure cannot be controlled. The doll, on the other hand, which substitutes for her can be retrieved, and the game thus allows the child to "hallucinate" her return. In this way the child wards off his anxiety by resort to magical omnipotence. The game is therefore an adaptive response and must be repeated as long as the anxiety continues.

The identification of aggression with an instinct of destruction can be criticized on the same grounds as the concept of repetition-compulsion. Aggression, as conceived by Freud, became an end in itself, rather than a means to an end. Actually, however, aggression comprises a variety of adaptive responses to frustration and to perceptions of danger and is simply one type of emergency behavior. It is always integrated through the emotion of rage and seeks to remove, injure, or destroy the source of threat. It is also aroused when the adaptive apparatus itself has been damaged or fails to develop and cannot be mobilized to cope with new situations. This adaptational conception of aggression holds good in all areas of behavior, including the sexual. Freud's division of aggression into erotic and nonerotic forms ignored the adaptive intent of

the aggression: the implementation of actions designed to achieve pleasure and security. Thus, sadism and masochism, when used for erotic purposes, were held by Freud to be the result of fusions between the libidinal instincts which pursued pleasure and the destructive instincts which pursued pain. This semantic device provides no usable clinical tool and remains a poetic excursion into vivid imagery. What is lost in such a hypothesis is the adaptive purpose of the aggression which is directed either against the sexual partner (sadism) or against the self (masochism). In either case the purpose is to guarantee some measure of sexual pleasure in the face of threat and danger.

The adaptational view of sadism and masochism does not require the reversal of the pain-pleasure principle made by Freud in *Beyond the Pleasure Principle*. Freud was right the first time. The pursuit of pleasure and the avoidance of pain is a fundamental biological law. No exceptions need be made for sadism and masochism. In these cases the organism makes use of painful means to achieve pleasurable ends. There is no shift in the ultimate goal. It is always pleasure, even though the wish may be repressed and hence concealed from both subject and observer. Freud's assumption that painful stimuli can in some way be *transformed* into pleasure cannot be clinically confirmed, and worse, it loses sight of the means-end operation that is actually involved. All we note is that pain is a pre-condition for the achievement of pleasure, not the source of the pleasure itself. In other words, sadism and masochism are varieties of *pain-dependent* (16) behavior which can be classified under two headings: pain-infliction and pain-absorption.

Let us examine the motivational sources of such behavior in adaptational terms. Pain-infliction (sadism) has nothing to do with a destructive death instinct, but is an adaptive response to a danger situation, and is, therefore, completely in harmony with the biological need for self-preservation. This response is mediated by the emergency emotion of rage. In sexual behavior the pain-inflictor wards off anticipated injury by the infliction of injury upon his partner. He gets in the first blow, so-to-speak, disarms his partner, and thus protected, can go on to enjoy his pleasure. In effect, the pain-inflictor must become enraged in order not to be afraid.

The problem of pain-absorption (masochism) is much more complicated in that a number of different maneuvers may be utilized to achieve the ultimate goal of pleasure. Furthermore, not only can the maneuvers vary, but their motivational origins can also vary. They can be classified as follows:

1. *Pain-absorption as a conditioned response.* We are reminded here of the famous Chinese "roast pork" fable of Charles Lamb where, in order to roast the pig, it was believed necessary to burn down the house. This is an example of action based upon a faulty perception of the relationship between cause and effect. The same distortion may occur in the masturbatory fantasies of a girl who has been indoctrinated with a view of sex as dirty, painful, and degrading. She achieves orgasm only if she imagines herself tied to a bed, urinated upon, beaten and raped. Such mental imagery reflects her accepted version of what must naturally be endured before pleasure is to be obtained in the sexual act. It has been repeatedly demonstrated in the laboratory that animals may be conditioned to seek painful stimulation before satisfying a basic need such as hunger (11). We believe that similar patterns of association may lead to pain-dependent patterns of integration of behavior in man. Such patterns are not derived from transgression, guilt, and self-punishment. In that sense they are to be distinguished from the next category.

2. *Pain-absorption as self-punitive behavior.* Pleasure, sexual and non-sexual,

is conceived as a transgression against parental authority. Any attempt to achieve the desired pleasure, therefore, is inhibited by the guilty fear of punishment. Pain-absorption becomes a prophylactic token suffering which wards off the anticipated greater threat from the parents. The patient makes the choice of the "lesser evil" and pays for his pleasure in advance. In this way he expiates his guilt through self-punishment, overcomes the inhibiting fear, and goes on to the desired gratification (1).

3. *Pain-absorption as passive-submission.* Fear of retaliation for self-assertion is overcome by acts or fantasies of passive submission. The defensive purpose of this type of pain-absorption is to deny any aggressive or destructive intent. This may be accomplished in either of two ways. In one, the pleasure can only be experienced through abject compliance which is supposed to reassure the object from whom the pleasure is sought. An example here is the submissive male who can function sexually only with an aggressive woman who subjects him repeatedly to humiliation and contempt. The other way makes use of compliance to deny any desire to compete with rivals, sibling or parent. This is seen in the male who can achieve orgasm only with the aid of a fantasy of being a woman. He thereby castrates himself, symbolically submits to his male competitors, and wards off their retaliation for daring to act like a man.

In conclusion we must again call attention to one of the fundamental differences between classical and adaptational theory. In an instinct psychology the drive furnishes not only the goal of an activity, but also the means for executive action. The latter has for many years been one of the relatively silent areas of analytic theory. Instinct psychology ascribes variations in behavior to alterations in motivation exclusively. Adaptational theory is interested in the manner in which functions of the ego are combined as integrative patterns because it rejects the assumption that they develop along a phylogenetically preordained course. Adaptational theory, therefore, not only deals with inborn factors in development, but also introduces two new variables: the contingency of the integrative pattern on experience, and the contingency of motivation on the integrative pattern. We have illustrated this contingency of motivation on available resources in our discussion of the traumatic neuroses of war. The impounding of adaptive devices for coping with the outer world leaves the organism undefended. Hence, the person either flees his environment or acts with disorganized aggression against it. There is nothing wrong with the motivation, either for pleasure or security; the defect lies in the apparatus for perception and action (integrative pattern). The fear-rage-disorganized aggression syndrome, therefore, wherever it appears, either in the traumatic neurosis or in other forms of psychopathology, need not necessarily be the result of an altered motivation. It may be predicated on an integrative deficiency in the coping apparatus of the ego, whether through disorganization after it is formed or through ontogenetic failure to develop.

In this part of the paper we have discussed Freud's efforts to expand the libido theory to encompass the hitherto neglected disorders of ego function. He succeeded in this expansion, but at the same time, perpetuated most of the defects inherent in the original theory. Nevertheless, the concept of narcissism and the dual instinct theory, with its new emphasis on aggression, made possible a much broader understanding of human behavior. We have tried to preserve those aspects of Freud's new concepts which we feel are useful for the understanding of ego functions within an adaptational frame of reference. In the fourth and final part of this paper we shall consider the implications

of Freud's new structural hypothesis, his revised theory of anxiety, and post-Freudian ego psychology.

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CHANGING CONCEPTIONS OF THE UNCONSCIOUS

O. HOBART MOWRER, PH.D.[1]

INTRODUCTION

In a field which otherwise abounds with confusion and uncertainty, there is one rock-ribbed fact: namely, that the hallmark of psychopathology is a feeling, on the part of the afflicted individual, that he is having experiences which he himself did not plan or "will" and which he does not at all understand. The ubiquity of this observation, therefore, makes entirely plausible the impression that personality disturbance is somehow associated with the presence and activity of an alien, dissociated, unknown, and ominous force or set of forces within the personality which is currently known as *The Unconscious.*

But beyond this point, there is scant agreement. What is *in* the Unconscious? How did it get there? What is it trying to *do*? Should it be assisted or opposed? These are questions to which, in our time, we have had no assured answers. The purpose of the present paper is to look at these questions and at the overall problem of psychopathology in historical perspective and to suggest, tentatively, a way of reinterpreting and, hopefully, integrating the presently discordant array of fact, theory, and practice.

FREUD ON REPRESSION AND THE UNCONSCIOUS

From the point of view of this inquiry, 1915 was an eventful year. In that year Freud published two papers, one on "Repression" and the other on "The Unconscious" which epitomized his theoretical system or so-called "metapsychology" and which set forth ideas that have gained world-wide currency and influence. In the second of these papers, Freud argued persuasively that the concept of mind or mental activity should not be confined to those processes which are at any given moment conscious or likely to become conscious, but should instead include forces or processes which are unconscious but which are not, for that reason, to be thought of as dormant or ineffectual in determining experience and action. He said:

> In many quarters our justification is disputed for assuming the existence of an unconscious system in the mind and for employing such an assumption for purposes of scientific work. To this we can reply that our assumption of the existence of the unconscious is *necessary* and *legitimate*, and that we possess manifold *proofs* of the existence of the unconscious. It is necessary because the data of consciousness are exceedingly defective; both in healthy and in sick persons mental acts are often in process which can be explained only by presupposing other acts, of which consciousness yields no evidence. These include not only the parapraxes and dreams of healthy persons, and everything designated a mental symptom or an obsession in the sick; our most intimate daily experience introduces us to sudden ideas of the source of which we are ignorant, and to results of mentation arrived at we know not how. All these conscious acts remain disconnected and unintelligible if we are determined to hold fast to the claim that every single mental act performed within us must be consciously experienced; on the other hand, they fall into a demonstrable connection if we interpolate the unconscious acts that we infer.... We become obliged then to take up the position that it is both untenable and presumptuous to claim that whatever goes on in the mind must be known to consciousness (8, p. 99).

While Freud did not hold that the unconscious mind is created solely by repression, he did hold that repression is a potent source of unconscious energies and a prime cause of psychopathology. The mere fact that an idea or impulse has been banished from con-

[1] Department of Psychology, University of Illinois, Urbana, Illinois. This paper was read by invitation at the 1958 meeting of the American Personnel and Guidance Association, in St. Louis.

ciousness does not at all mean that it has lost its dynamic properties; and its continued striving for recognition and expression constitutes, according to Freud, the principal basis of anxiety and ensuing symptom formation. More specifically Freud believed that the mental processes which are most likely to undergo repression are the instinctual forces of sexuality and hostility and that repression occurs, typically, when the ego, under the sway of socially instilled moral precepts, rejects and condemns these impulses.

Two forms or stages of repression were to be distinguished. There was, first of all, what Freud called *primal repression*, "a first phase of repression, which consists in a denial of entry into conscious of the mental (ideational) presentation of the instinct" (8, p. 86). But, continued Freud, "repression does not hinder the instinct-presentation from continuing to exist in the unconscious and from organizing itself further, putting forth derivatives and instituting connections." (8, p. 87).

> The second phase of repression, *repression proper*, concerns mental derivatives of the repressed instinct-presentation, or such trains of thought as, originating elsewhere, have come into associative connection with it. On account of this association, these ideas experience the same fate as that which underwent primal repression. Repression proper, therefore, is actually an after-expulsion (8, pp. 86–87).

Therefore, continued Freud,

> The process of repression is not to be regarded as something which takes place once for all, the results of which are permanent, as when some living thing has been killed and from that time onward is dead; on the contrary, repression demands a constant expenditure of energy, and if this were discontinued the success of the repression would be jeopardized, so that a fresh act of repression would be necessary. We may imagine that what is repressed exercises a continuous straining in the direction of consciousness, so that the balance has to be kept by means of a steady counter-pressure. A constant expenditure of energy, therefore, is entailed in maintaining a repression, and economically its abrogation denotes a saving (8, pp. 89–90).

The resolution of a conflict between instinct and moral scruple by means of repression is thus unstable and debilitating; and from this it followed, reasonably enough, that the sovereign aim of therapy was to undo repression and permit sexual and hostile impulses to find freer, less encumbered routes to gratification. Such a program called upon the psychoanalyst to align himself with and to speak for the instincts, in opposition to the moral or pseudo-moral forces within the personality which have instituted the repression. Hopefully, these forces can be held back by the combined strength of the patient and the analyst so that the blocked instincts can find more adequate expression; and, more than this, it was believed that, by working through the so-called transference neurosis, the severity and irrationality of these forces might be permanently lessened so that, following analysis, the individual could function, more naturally and more comfortably, without the analyst's continued presence or assistance.

For all practical purposes, Freud's theory was herewith complete. In the 1915 paper he still regarded anxiety as a direct "transformation" of the repressed impulses, a view which was to be somewhat modified in his "second theory" of anxiety. And he was still to introduce the term, superego, although he was already speaking of a "censorship" function (8, p. 105). But, in broad outline at least, the theory was fully developed and was later to be changed in only minor ways. With his special gift for graphic similes, Freud summarized his 1915 discussion of repression thus:

> In general, repression of an instinct can surely only have the effect of causing it to vanish from consciousness if it had previously been in consciousness, or of holding it back if it is about to enter it. The difference, after all, is not important; it amounts to much the same thing as the difference between ordering an undesirable guest out of my drawing-room or out of my front hall, and refusing

to let him cross my threshold once I have recognized him (8, p. 91).

To which we need only add that the unwelcome "guest" does not, after his ejection, quietly go away, but instead continues to try to find other means of re-entry and, much in the manner of a restless ghost, haunts the abode which it feels to be rightfully its own, to the dismay and discomforture of the dominant occupant.

THE ALTERNATIVE VIEW OF STEKEL, BOISEN AND OTHERS

In his recently published three-volume biography, Ernest Jones defends Freud against the common surmise that he was a difficult man to get along with and argues that those who were first attracted to but then, sooner or later, turned against him were themselves unstable or of doubtful character. On the other hand, Ira Progoff, in his book *The Death and Rebirth of Psychology*, suggests that the difficulty was not basically one of "personality" at all, on either side, but was rather ideological. At least in the case of Adler, Jung and Rank the final rupture, Progoff holds, came because these men were keenly aware of incongruities between the clinical facts and Freud's theories and were compelled to withdraw from the orbit of his influence in order to be true to their own developing ideas and convictions.

Among the less well known but most interesting of those men who first joined and then left Freud was Wilhelm Stekel. In his autobiography, published in 1950, Stekel gives the details of his break with Freud, over apparently personal and practical matters; but a study of Stekel's other published works reveals a deep and, for our purposes, highly significant theoretical deviation.

In the preface of a book first published in German (1938) and later translated into English (1950), with the title *Technique of Analytical Psychotherapy*, Stekel indicated just how complete his break with Freud had been by remarking:

> I contend that orthodox analysis has reached a crisis which betokens that the end is near, that collapse is approaching. Clinical records of its successes count for nothing, now. The happy days of interminable analyses are gone for ever (18, p. xxii).[2]
>
> The medical analysis of tomorrow will have to separate the wheat from the chaff, to combine the various doctrines and schools into an organic whole, and to establish an undogmatic, unprejudiced psychoanalysis. Then the physician will become the educator of mankind (18, p. xxiv).

The seemingly hasty and bombastic way in which Stekel wrote undoubtedly kept him from being taken as seriously as he otherwise might have been; but in light of subsequent developments, we find a genuinely prophetic element in his work. In *Technique of Analytical Psychotherapy* there is a most remarkable chapter entitled "Diseases of the Conscience" which does not unfold at all the way one might expect it to. Freud—implicitly in his early writings and, later on, quite explicitly—held that repression, as the primal pathogenic act, occurs because the individual's conscience or superego is too severe, unrealistic, and irrational. Therefore, when Stekel refers to "diseases of consciences," one might well expect him to have in mind much the same assumptions as had underlain Freud's conception of the so-called neuroses.

Instead Stekel's attitude toward conscience is respectful and positive; and by "diseases of conscience" it is quickly apparent that he means disease or disturbances which are caused by a careless disregard or active defiance of conscience and its urgings. He says:

> My experiences as a psychotherapist have convinced me that many nervous disorders are "diseases of the conscience." Of course it is far from easy to recognize conscience under the manifold disguises it can assume. But there are stereotyped ways by which we can be aided in exposing the wiles of conscience, and in discovering when patpaths are play-acting—for they often persuade themselves that they have no conscience, and take refuge in an ostensibly organic disease in order to

[2] Cf. Freud's own paper, "Analysis terminable and interminable" (5).

escape the torment of self-reproach. Sometimes, however, such a patient will during the analysis have a bad "fit of conscience," bursting into tears, which may continue for as much as half an hour before the releasing avowal comes (18, p. 320).

Stekel, as was his literary practice, then plunges into a series of interesting and highly dramatic case histories which we cannot review here. But in summary he says:

All these cases show how grave a blunder we should make were we to accept the one-sided view of those Freudians who hold that lack of sexual gratification is the exclusive cause of psychogenic troubles. In Cases 69, 70, and 71, free rein was given to the sexual impulse, which was adequately gratified, and yet intractable illness supervened, whereas during the periods of abstinence the symptoms disappeared because the conflict-engendering relations were broken off and the conscience was at rest (18, p. 324).

I have had many cases of the kind, but have merely selected a few to show that parapathic disorders may be diseases of the conscience. The patient suppresses his remorse, tries to drown the voice of conscience, and feigns immunity. Nature takes vengeance (18, p. 327).

As long as Freudian theory was in the ascendency, it is little wonder that Stekel's views remained unknown and without influence. But in 1956 a book entitled *Progress in Psychotherapy* was published in this country (under the semi-official auspices of the American Psychiatric Association) in which many of the forty-odd contributors expressed mounting doubt and disillusionment concerning orthodox psychoanalysis and in which there is a chapter, by Lowy and Gutheil, which is devoted to an exposition and advocacy of Stekel's so-called "active analytic" approach to psychotherapy. Here these authors say:

Stekel's debut as the originator of an independent psychoanalytic technique was manifested by his thesis that every neurosis—or as he called it "parapathy"—is based on a conflict between the principles of morality and loyalty and the impulses and tendencies to the contrary. This simple, clinically evolved formula was then not as self-evident as it has become subsequently....

Although essentially a practitioner, Stekel also made a few important contributions to the theory of psychoanalysis. Long before Freud's discovery of the superego, Stekel spoke of the "moral ego" as a factor in the psychogenesis of neurosis. He maintained that a neurotic reaction can ensue not only through the repression of moral tendencies; that on certain occasions, even if the individual appears to be ready to give in to his antimoral and antisocial desires, the moral trends may assert themselves against the patient's will. He [Stekel] quoted the case of a traveling salesman who was always potent with his wife, while being impotent with other women. Cases of this type were considered proofs that neurotic symptoms may be serving the patient's unconscious moral needs, that they may safeguard the individual's intrinsic morality (12, p. 136).

As Progoff points out in the book previously cited, Adler, Jung and Rank, in abandoning the classical psychoanalytic position, all moved in the direction of a greater emphasis upon the social, moral, or "spiritual" factors in neurosis; but this trend was certainly outstanding in Stekel, as the foregoing quotations indicate.

Also, about the same time and apparently quite independently of any direct connection with Stekel, an American writer by the name of Anton T. Boisen was formulating a very similar point of view. As a result of a brief psychotic experience of his own and of subsequent participation in the Rockefeller-supported study of schizophrenia at the Worcester (Massachusetts) State Hospital, Boisen became convinced that psychosis represents a character crisis, from which an individual may move either in the direction of deterioration or toward personal reorganization on an ethically and socially higher plane. Gentle, soft-spoken, and in no sense given to controversy, Boisen was temperamentally very different from Stekel, yet his ideas about psychopathology are much the same. In his best known book, *The Exploration of the Inner World* (1936), Boisen's views are epitomized by the following excerpts. He says:

The form of psychotherapy now most in the public eye is psychoanalysis. This in its aims is the exact opposite of faith healing. It has often been compared by its proponents to surgery, and major

surgery at that. It is an attempt to lay bare and bring into clear consciousness the disowned sexual desires and cravings which it assumes have become detached from the conscious self and are responsible for the neurotic symptoms. Its aim is to make over the harsh conscience and the rigid ethical standards which have led to the disowning of these sex cravings so as to permit of their incorporation in the personality. To this end the psychoanalyst tries to get his patient to live through again his early experiences. The entire procedure is designed to detach the patient from his early loyalties in order to enable him to build up a new philosophy of life in which the dissociated cravings may be properly assimilated (1, pp. 243–244).

In all my efforts [as a hospital chaplain and therapist] I rely upon a simple principle derived from my theological training which seems to me far too little understood. I refer to the view that *the real evil in mental disorder is not to be found in the conflict but in the sense of isolation or estrangement*. It is the fear and guilt which result from the presence in one's life of that which one is afraid to tell.[3] For this reason I do not consider it necessary to lower the conscience threshold in order to get rid of the conflict. What is needed is forgiveness and restoration to the fellowship of that social something which we call God (1, pp. 267–268).

I would furthermore [suggest] that our findings indicate that the sense of guilt, the self-blame and the emotional disturbance which accompany it are not themselves evils but attempts at a cure. The real evil is the failure to attain the level of adjustment called for in some new period of development and the short-circuiting of the vital energies through easy satisfaction (1, p. 281).

Elsewhere in the same volume Boisen, using a phraseology almost exactly the same as Stekel's, refers to a severely neurotic or psychotic person as one who "has recourse to certain unsatisfactory protective devices, seeking to suppress a troublesome conscience, until the tension reaches the breaking point and the solution comes with cataclysmic suddenness." (1, p. 78).

Only vaguely aware of the names of Stekel and Boisen and without any detailed familiarity with their writings, the present writer, in 1947, after more than a decade of acceptance of the Freudian view, took the following position:

By way of recapitulation let it be said that we are here fully accepting the basic theory of Freud concerning the nature of *symptom formation*, *i.e.*, that a neurotic symptom, so-called, is any habit which resolves anxiety but does not lessen the ultimate, realistic problem which the anxiety represents. And we are also in complete accord with Freud's contention that *repression* is necessary to an adequate theory of anxiety; without this concept a really satisfactory account of anxiety is apparently quite impossible. But it now appears, on both pragmatic and logical groups, that Freud never succeeded in fully apprehending the essential nature of anxiety itself.

It is not possible at this time to give at all completely the evidence on which this statement is based. But what can be indicated, at least briefly, is the direction in which Freud's analysis needs to be modified. In essence, Freud's theory holds that anxiety comes from evil wishes, from acts which the individual would commit if he dared. *The alternative view here proposed is that anxiety comes, not from acts which the individual would commit but dares not, but from acts which he has committed but wishes that he had not. It is, in other words, a "guilt theory" of anxiety rather than an "impulse theory."*

Stated in its most concise but abstract form, the difference between these two views is that the one holds that anxiety arises from repression that has been turned toward the *id*; whereas the other holds that anxiety arises from repression that has been turned toward the *superego* or *conscience* (13, p. 537).

Naturally, the later discovery of the antecedent works of Stekel and Boisen and the privilege of personal acquaintance with Dr. Boisen have been a source of great personal satisfaction to the present writer. But, despite the converging agreements to be found here and elsewhere in contemporary literature, some conceptual difficulties are still to be resolved. These, it so happens, have been neatly summarized by Sidney M. Jourard in his just-published book, *Personal Adjustment—An Approach Through the Study of Healthy Personality*. Here the author says:

Clinical experience suggests that neither Freud nor Mowrer is wholly correct or wholly incorrect. Rather, it can be found that some neurotic patients do indeed have a conscience that is too strict; in

[3] Somewhere I have recently read that Havelock Ellis, even earlier, once remarked that the problem of psychopathology arises, not from the unconscious, but from the *unuttered*!

order to remain guilt-free, they must refrain from *all* pleasurable activities, including those which society condones. Other patients may be found with the makeup which Mowrer has regarded as nuclear to all neurosis—they repress conscience so they can break social taboos without conscious guilt.

If we paraphrase Freud's therapeutic aim to read, "change the conscience in lenient directions," and Mowrer's to read, "strengthen the conscience, and help the person to conform with his conscience," we are thrust into an acute impasse: we find that contradictory roles are assigned to the conscience in neurosis, and contradictory therapeutic aims are proposed. This impasse can be resolved if we recognize that consciences *are not all alike* among all members of a given society. Some consciences are stricter than the society requires, some are more lenient, some are quite deviant from the social value system, and many are highly conflicted (10, p. 366).[4]

This analysis seems by no means unreasonable. It does not, however, accurately represent my own earlier position in these matters, in that *never* did I hold that it was the aim of therapy to strengthen or increase the severity of the conscience, although this has been a common misprecception. All I had said was that perhaps the neurotic's great need was to have his conscience *released*, just as Freud had conjectured that it was certain repressed instincts that were clamoring for freer access to consciousness and a greater share in the control of behavior. In neither case was it suggested or even implied that the repressed part of the personality needed to be *strengthened*. Because Freud did hold that the neurotic's superego needed to be made *less* rigid and *less* severe and because I had expressed a disagreement with this position, it was an easy but entirely mistaken inference that I was saying just the reverse of this. My difference with Freud's position had to do, explicitly and exclusively, with the question of *what* is repressed or, in other words, with the *direction* of repression and the *content* of the unconscious; and I welcome this opportunity to attempt to clarify the issue (see Levitsky, 11).

In other respects, Dr. Jourard's formulation is certainly plausible. Consciences *do* vary, from infancy to maturity, from culture to culture, and from individual to individual within the same culture. The psychopath, at least by definition if not in actual fact, is a person with an underdeveloped, weak conscience; and there is certainly no reason, *a priori*, why in other individuals conscience might not be excessively severe. However, it is not my wish here to debate this issue, either on empirical or logical grounds. Rather do I wish to invite attention to a different way of conceptualizing the whole matter of the unconscious, conscience, and the question of repression.

THE UNCONSCIOUS RE-EXAMINED IN A RELIGIOUS CONTEXT

Psychologists, despite pretentions of open-mindedness and scientific objectivity, have in certain respects been an arrogant and bigoted lot. I recall hearing a colleague, in the mid-1930s, when the question of whether we should include History in the disciplines represented at the Institute of Human Relations at Yale, say that we were not interested in History, that we were not interested even in the History of Science, that we were interested only in *making* Science. And certainly there has been a widespread assumption that the Future was ours alone. Some of us psychologists are now old enough to feel that we have experienced a sizeable piece of this Future, and we are by no means sure that we are necessarily much wiser or more efficient directors of destiny than were some of our forebears. Certainly the phenomena which we today call psychopathology have been known to mankind for a very long time; and it is by no means certain that our progenitors understood or managed them less well than do we.

Thus chastened, I, as a psychologist, have found myself looking with renewed interest and respect at some of the great cultural

[4] For a somewhat similar position, see Fenichel (1945), Fromm (1947) and Jung (1938).

and historical documents of the past; and here I have found nothing more illuminating than that remarkable collection of writings known as the Old Testament. The language is often metaphorical and poetic; but the basic intent and content of these writings can hardly be missed. And here we find, unmistakably, a psychiatry which is at one with religion.

Old Testament writers interpreted their own and their fellowmen's emotional anguish as a manifestation of the "wrath of God." This idea is found in Ecclesiastes (**5, 7**), Isaiah (**13, 9**), Psalms (**90**), and elsewhere; and Job puts it succinctly when he says, "Have pity upon me, have pity upon me, O my friends; for the hand of God hath touched men" (**19, 21**). But the theme is perhaps most explicitly and fully developed, in the 4th Chapter of Ist Daniel, in the account of the madness that beset Nebuchadnezzar. Being afflicted by visions and dreams, the King called Daniel in to *interpret* them for him. After much hesitation, Daniel told the King that he had become vain and iniquitous, and that he was going to have to suffer grievously before he found deliverance.

> And at the end of the days [of suffering and humiliation] I Nebuchadnezzar lifted up mine eyes unto heaven, and mine understanding returned unto me, and I blessed the most High, and I praised and honoured him that liveth forever, whose dominion is an everlasting dominion, and his kingdom is from generation to generation; and all the inhabitants of the earth are reputed as nothing: and he doeth according to his will in the army of heaven, and among the inhabitants of the earth: and none can stay his hand, or say unto him, What doest thou?
>
> At the same time my reason returned unto me; and for the glory of my kingdom, mine honour and brightness returned unto me; and my counsellors and my lords sought unto me; and I was established in my kingdom; and excellent majesty was added unto me (Daniel I. Chapter 4).

Here, it seems, are implications of a most profound and far-reaching kind. Here, if I understand the stories of Job, Nebuchadnezzar, and other Old Testament characters, there is no intimation that psychopathology necessarily involves repression; surely the very core of the problem is that God has spoken, expressed himself, *touched* the individual in question. And there is accordingly no intention or need to make the unconscious conscious.[5] The question rather is *why* God and conscience have smitten us and what we can *do* about it.

This is not to say, of course, that the now afflicted individual may not have *previously* repressed conscience and "denied God." The wicked are often referred to as "hard of heart," calloused, and insensitive. And as long as these defenses hold, there is no manifest disturbance. Rather the "disease," if we may now use that term in a strictly social and moral sense, is to this point a purely *latent* one; and when conscience finally rebels and erupts, when, in Biblical language God's patience is exhausted, the individual is already grappling with a crisis from which he may emerge a chastened, changed and converted man.

Of course, in a certain limited sense one may say that religious leaders *do* attempt to make the unconscious conscious, do attempt to release repressed, imprisoned, denied forces of personality. To the hard of heart, they continually put forth a "call to repentance," the confession of sin, and reaffirmation of obedience to the good and to the godly. In fact, it would seem that this is one of the main functions of regular worship on the part of the devout, to constantly acknowledge and correct their waywardness and to grow in the "grace and admonition of the Lord."

But it is surely equally, or even more importantly, true that remorse, contrition, and dismay often break out spontaneously in deviant individuals and that it is this state of *manifest* disturbance which we call neurosis or mental illness and which someone is

[5] Cf. Stekel's remark, "After thirty years' experience of analysis, I no longer believe in the overwhelming significance of the unconscious (in the Freudian sense of that term)" (17, p. xx).

supposed to "treat." Therefore, it would seem to be a real question as to whether efforts at making the unconscious conscious are relevant. If, by the unconscious, we now mean conscience and the Hand of God, the task would seem to be *quite the reverse*, namely that of helping the individual find what he can do that will please God, satisfy conscience, and thus allow him once more to "go forth in peace."

Steeped as we are, in this generation, in a particular form of naturalism, we do not easily assimilate either the language or the thought forms of the ancient Hebrews; but if the interpretation of psychopathology which has just been suggested be correct, its naturalistic basis is at once apparent. To me it has been helpful to recall that a child can operate in either of two ways: (a) of his own free will and wish or (b) under parental compulsion. By acting "like a big boy (or girl)," that is to say, maturely and responsibly, the child enjoys many privileges and feels and indeed is "free." But if the child "forgets" or ignores what his parents have tried to teach him, they have to reassert their authority, with an ensuing loss of freedom and self-direction on the part of the child.

In like manner, may we not assume that an adult is free, *i.e.*, self-determining and autonomous, only so long as he is *good* and that when he sufficiently violates the trust of conscience, the latter "takes over," perhaps far from gently and almost certainly with a feeling on the part of the individual that "things are happening to me." Like the parents of an earlier day, conscience thus deprives the individual of his freedom and will restore it only when he has shown that he can again be trusted. Thus, the objective of therapy is not to "make the unconscious conscious." If the view just indicated is valid, the very root of the difficulty is that the unconscious (now understood as conscience) is all too much in evidence—and the objective is to get it to subside, retreat, relax; and this it will presumably do only when the ego or autonomous part of the personality has redeemed itself.

Religion, in its most vital and significant form, has always been intent upon saving "lost souls," *i.e.*, in helping individuals regain their sense of peace and freedom through a return to responsible living, integrity, and concern and compassion for others. This, it seems, is "therapy" of the most profound variety; and it is perhaps our great misfortune that this conception is today accepted and practiced with so little confidence.

IMPLICATIONS FOR PSYCHOTHERAPY, COUNSELING AND "EGO PSYCHOLOGY"

If space permitted, it would perhaps be profitable to try to relate the foregoing discussion to that somewhat chaotic but vigorously growing system of thought known as contemporary learning theory. Starting as it did with just the two concepts of objectively observable stimulation and response, learning theory has gradually incorporated certain subjective, or "intervening," variables, notably those of fear, relief, hope, and disappointment. Karl Muenzinger, at the University of Colorado, has recently suggested a way in which "courage" can be operationally defined and empirically studied in rats or other laboratory animals; and I think it entirely probable that learning theory will soon be elaborated to the point that it can be equally precise and explicit about the phenomenon of *guilt*. Already some progress has been made in this connection, but it would carry us too far afield to discuss this matter further.

Recently I was much interested and, I confess, not a little surprised to hear a physiological psychologist state that there is some evidence that the neurological correlates of the unconscious mind have now been at least roughly identified and that there is apparently here a capacity for gross emotional conditioning which may later affect the individual in ways very similar to

those already attributed to conscience in this paper. Here, likewise, we will await further developments eagerly, with the possibility in mind that we may, at long last, be approaching a way of thinking about psychopathology which articulates not only with social psychology and religion but also with learning theory and neurophysiology.

But there is a more immediate consideration before us. A few months ago I heard a theologian say that although he was convinced that religion is relevant to the problem of mental health, he did not regard religion as *sufficient* in this connection. When asked to elaborate, the theologian said that he meant, quite simply, that religion can deal with the conscious personality, but *not* with unconscious forces. This position reflects, of course, one way in which the church has tried to make peace with the secular healing professions; but there is a question as to whether such a "division of labor" corresponds to reality. If the line of thought we have pursued in this paper is even remotely valid, religion, at its best, is always concerned with the unconscious, conceived as conscience and the Voice of God. The God of Moses was known as the *Invisible* God, and the church, quite generally, has been concerned with helping individuals live so that they do not see God as an hallucination or hear his angry voice.[6]

Now if our general point of view here is tenable, one would have to entertain the same misgivings about the attempt which is commonly made to draw a line between psychological counseling and psychotherapy on the grounds that the latter deals with unconscious material whereas the former does not or at least *should* not. In November, 1950, the University of Minnesota was host to a conference on "Concepts and Programs of Counseling"; and at that time I gave a paper entitled "Anxiety theory as a basis for distinguishing between counseling and psychotherapy." Much of what was said on that occasion is congruent with the present discussion. Take for example this sentence: "It makes an enormous difference practically whether we, as therapists, are afraid of anxiety in our patients (or in ourselves) [as something malignant and destructive] or whether we see it as essentially a constructive ally both to our therapeutic efforts and to the best trends and forces within the patient" (14, p. 26).

But I also took the position that we should clearly distinguish between two forms of helping activity—call them what you will—the one of which involves dealing with essentially normal persons, *i.e.*, persons whose conflicts and difficulties are still fully conscious, and the other involving persons in whom dissociation and repression have already occurred and where there is therefore an unconscious to deal with. While such a distinction may still have a limited justification, it would now seem that the psychological counselor, at least in principle, is in much the same position as the religious counselor. If our reasoning has been correct, the normal individual has actually a "larger" unconscious than does a disturbed person; and support, direct admonition, and counsel may be one of the best means, in the latter case, to get conscience to relax and again become "unconscious." As already suggested, the best way for a child to get his parents "off his neck," to use a common but graphic expression, is for him to redeem himself with respect to past misdeeds and to regain their confidence and trust for the future. Likewise, surely, the best hope of the conscience-stricken adult is to associate himself with other persons or *ideas* which can encourage and guide him into paths of conduct that will lead ultimately to the approval rather than condemnation of conscience.

Today it is difficult to discern clearly what is happening in the field of psychoanalysis. In general, it is in a state of crisis and uncertainty. But one trend stands out rather unmistakably, namely, the growing empha-

[6] See Boisen's illuminating discussion (2) of the "externalization of conscience"; also Freud on the "delusion of observation" (6, p. 85).

sis upon "ego psychology." I cannot claim to have been a close student of this trend, but even from afar one sees in it developments which are complementary to the thinking we are here exploring. Here, instead of stressing superego over-severity, we find more reference to the importance of *ego adequacy*. Here it is not nearly so much a question, as it was formerly, of how to pare down or reform the conscience; rather the question is, how to get the conscious self-system or ego of the individual to grow and mature, so that it is more responsible and more competent to deal with the manifold demands that impinge upon it. Here, surely, the work of the minister, the counselor, the teacher, and the parent are all highly pertinent; and where intensive, specialized psychotherapy becomes necessary, it is presumably not so much a question of reversing or undoing the work of others but instead a matter of trying to *carry on* where others have left off or have failed.

On the whole, however, one has the impression that the development of ego psychology has not as yet proceeded very far in psychoanalytic quarters. Certainly Federn's 1952 (posthumous) volume, *Ego Psychology and the Psychoses*, cannot be said to have shed any great new light upon these matters. This book is abstruse and still so heavily encumbered with classical psychoanalytic jargon that whatever innovations it contains are very hard to discover. Far more illuminating and, it would seem, more promising is the approach suggested by Shoben in his paper entitled, "Toward a concept of the normal personality" (16). Although he does not use the term, Shoben here is largely concerned with ego psychology. He says, unequivocally, that the normal, integrated, mature individual must of necessity be concerned with self-control, honesty, personal responsibility, and compassion and affection for others and that how one conceptualizes life and interpersonal relationships is of the essence. "Ideologies are at issue here," he frankly says and argues persuasively for the importance also of values and value systems. Here, surely, is an ego psychology—and one with which the social scientist as well as the theologian can very largely agree.

Writing on the Oxford Group movement, in 1950, Walter H. Clark described the difference between the aims of psychoanalysis and religion thus: "Both the psychiatrist and the Group want to reduce the sense of guilt—the former by reducing the aim, the latter by increasing the accomplishment" (3, p. 238). While there is no denying that we sometimes set for ourselves and for others unrealistic aims, yet it now appears that less harm is usually done on this score than when an attempt is made to be deliberately less, morally, than we potentially are. A scholarly friend tells me that our word *anthopoid* comes from a Greek word meaning, "with the head up." And we are apparently in the process of discovering that we cannot solve our problems by looking "down" without also losing perhaps the most distinctive aspect of our humanity.

FURTHER IMPLICATIONS AND CONCLUDING OBSERVATIONS

From the foregoing discussion it would seem that psychology and related disciplines are undergoing a period of painful reappraisal; and our vision and understanding are still far from perfect with respect to the end points of this movement and change. But perhaps the way is sufficiently illuminated for us to see before us a few steps further.

Jourard says that in assuming that repression can be directed toward either id or superego, an impasse has been reached; and we have here tried to cut through that impasse by exploring the proposition that in psychopathology the trouble arises, not from what is being repressed, but rather from what, in the form of a wrathful conscience, is being *expressed*. *Past* disregard, denial, or "repression" of conscience may, to be sure, account for the present outbreak or "attack"; but the very presence of disturb-

ance means that the repression has broken down. And the psychotherapeutic task, it would seem, is much less that of releasing the repressed than of helping the individual *understand* what is happening to him and how he can help make the final outcome constructive rather than destructive.

However, our hypothesis does not at the same time exclude the possibility of impulse repression, in at least a limited sense. For some time now I have been interested in collecting illustrations of seemingly *bona fide* impulse repression but which call for an interpretation rather different from the one Freud proposed. From several possible examples, allow me to select and present the following one, because of its simplicity and brevity. It was reported to me by a colleague. He said (as I later reconstructed an informal conversation):

> A week or so ago I had an experience which I think will interest you, as a psychologist. Some two months ago the chairman of the program committee of an organization to which I belong called and asked me to recommend someone as the speaker at the annual meeting of the organization. This I did, and I was pleased, when the occasion arrived, that the person whom I had suggested gave a quite excellent and well-received talk. Afterward, however, when my wife and I went home, I found I was vaguely dispirited; and, during the period of meditation which I practice before going to bed each night, I had a very peculiar experience. It was almost as if there was a "live coal" in a part of my mind, a sort of localized "anxiety" I suppose you'd call it. Then, all of a sudden, I realized that I had been *jealous* of the speaker; and immediately the "burning" sensation within me dissolved. I guess I knew I was now in a situation where I couldn't and wouldn't *act* upon my jealousy so it was safe for me to have the feeling. Needless to say, I was *ashamed* of myself for having had such a feeling.

Here, apparently, was a situation where conscience, far from being repressed, had been instead the repressor. Like a parent who does not entirely "trust" a small child in some crucial social situation, conscience had held my friend, so to say, tightly "in rein" and had released him only when the chance for misconduct had passed. There was, presumably, some history of past ungraciousness and envy in situations such as the one described; and it would only be with improved self-control and a genuine "change of heart" on the part of the individual in question that his conscience could "trust" him to handle such a situation responsibly and well. Here the goal of "therapy" would not be to release the repressed impulse but rather to help the individual grow in responsibility and "ego strength."

The term, ego strength, can of course be easily misunderstood. It can be taken to imply independence, self-sufficiency, and even selfishness and defiance. As we are presently conceiving of it, the term implies instead obedience and dedication to broad social objectives and values. Here the "strong" individual is not an individual who selfishly demands or refuses but one who instead *serves* and is loyal to a set of high social ideals and values.

The point of view here expressed is, of course, manifestly similar to that of religion. Our generation is one which has been said to have lost its "faith in God." Perhaps this loss of faith is related to a misconception of God, which the church itself, in recent centuries, has inadvertantly fostered. God, we have been told, is *something out there*: and we have forgotten that there is excellent precedence for thinking of God also as *something in here*, a part of our own selves and innermost experience. For example, consider this passage from I Kings:

> And behold the Lord passed by, and a great and strong wind rent the mountains, and broke in pieces the rocks before the Lord, but the Lord was not in the wind; and after the wind an earthquake, but the Lord was not in the earthquake; and after the earthquake a fire, but the Lord was not in the fire; and after the fire—a still small voice (**18:** 11-12).

Can it be that we have lost faith in God because we have *lost faith in conscience?* Our widespread use of alcohol and other so-called "tranquilizers" is surely, from one point of view, an expression of distrust of conscience; and in classical psychoanalysis,

with its premise about the over-severity of the superego, the distrust is even more explicit. There, as Boisen observes, the therapeutic aim is likened to that of surgery, with the superego the object of interest. We are now beginning to suspect that where psychoanalysis has been successful in its avowed aim, the result is likely to be, not a normal human being, but a person with manifest tendencies toward psychopathy and acting-out; but psychoanalysis is usually not so effective. One of the cases cited by Stekel in his chapter on "Disease of Conscience" has to do with a physician from India who had come to Vienna for treatment—and, also, it seems, because of Vienna's reputation for liberality in the realm of sex.

> The patient sprang from a pious family [and] I pointed out that his troubles were due to a disease of conscience, and told him that the sleeplessness and pruritus would cease to trouble him if he refrained from the libertinage which was contrary to the principles in which he had been brought up. Realizing that I might be right, he broke off all his liaisons and returned to a fleshless diet. Thereupon the pruritus ceased, and he slept exceedingly well....
>
> Psychologically interesting is the fact that [the physician was, however] extremely dissatisfied with the results of the treatment. He had expected the impossible. I ought to have freed him from his inward inhibitions, so that he could enjoy relations with as many women as he pleased (18, pp. 322–323).

Conscience would thus seem not readily altered, and perhaps we do well to rethink and redirect our would-be therapeutic strategies. Certainly it is not easy to be a man as well as an animal, to be dominated by social as well as biological considerations. But the privilege of declining to at least make the supreme effort is apparently no longer ours. Man is that remarkable and paradoxical creature who has, as we may say, domesticated, socialized, and civilized *himself*, historically speaking; and this same drama, struggle, and high calling is one which is repeated, in miniature, in each of us. Therefore, the issues on which our personal success or failure, our humanity or inhumanity, our sanity or insanity hinges are as broad as the total human enterprise; and the prevention or correction of our human shortcomings can hardly be reduced to the level of the services performed by an automobile mechanic, the pharmacist on the corner, or even the surgeon—grateful as we are for their expert and specialized assistance on certain occasions. Surely with the slogan of the National Association for Mental Health we can agree: "Mental health is *everybody's* business." And any attempt, on the part of any professional or special-interest group to claim omnipotence and "full responsibility" in this field is as presumptuous as it is illogical.

Is a society "sick" because it has standards, and rules, and laws and punishes offenders thereof by fines, imprisonment, or even death? Who would care to claim "full responsibility" in *this* area? The problem is neither larger nor smaller than our struggle to be fully human. And is an individual "sick" because he, too, has standards and punishes himself, sometimes quite severely, for deviation therefrom? A penitentiary is the place we send those whom society condemns; and a mental hospital is the abode of the self-condemned—or, as Boisen has called it, a sort of this-worldly purgatory, from which a person may return, to a more abundant life, or in which he can also sink into the hell of a living death.

We thought it a great gain when, a century or so ago, we began to try to perceive the insane as sick rather than as sinful. But we are now wondering, to put it as a quip, if sin is not the lesser of two evils. Citing the supporting views of Marzolf and Riese, Shoben says:

> Recently, there has been a considerable dissatisfaction with the whole notion of interpreting psychological states in terms of disease analogies. Maladjustive behavior patterns, the neuroses, and—perhaps to a lesser extent—the psychoses may possibly be better understood as disordered, ineffective, and defensive styles of life than as forms of sickness (16, p. 184).

One of the features of the Protestant Ref-

ormation that gave it such dynamic power and wide appeal was the doctrine of "the priesthood of all believers" and belief in "the sanctity of the common life." Nothing, it would seem, short of a similarly broad and universal invitation and challenge, to each and every member of contemporary society, can represent a fully rational and potentially more effective attack upon contemporary man's faltering faith and tottering reason.

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THE FEMALE CASTRATION COMPLEX

IRVING BIEBER, M.D.[1] AND MARVIN G. DRELLICH, M.D.[1]

This paper reports the authors' observations and conclusions about concepts of female castration derived from the investigation of women undergoing surgery of the generative organs, from female patients in psychoanalysis, and from observations of female children.

The material on the effects of surgery is from a study of 23 women who underwent panhysterectomy at the Memorial Center and who were interviewed with focussed psychoanalytically oriented techniques (9). The value of information obtained from focussed interviews with patients undergoing surgery has been established in previous studies of the psychological impact of cancer and cancer surgery (1, 12, 16, 17, 18). The women in psychoanalytic therapy were seen by the authors in private psychoanalytic practice. The material on female children consists of direct observations of so-called normal children and discussions with parents, some of whom were in psychoanalytic therapy.

Of the 23 patients studied at Memorial Center, all viewed the hysterectomy as a castration in some degree. As we have reported elsewhere (8, 9), the dominant psychological reactions involved four areas: 1) child-bearing, 2) menstruation, 3) sexual feelings and feelings of femininity, 4) feelings of integrity and well-being.

1. THE CHILD-BEARING FUNCTION

Pre-menopausal women who undergo hysterectomy manifest feelings of loss and regret about the termination of the child-bearing potential. This applies even to those women, who for whatever reasons, have consciously decided against further pregnancy. The psychoanalytic explanation of such reactions varies. Classical psychoanalytic theory places great emphasis on the child as a replacement or substitute for the absent penis. Even if we accept the operation of this determinant, our data indicates that its importance has been overestimated and overemphasized at the expense of other determinants which are equally observable. Wishes to have children are as demonstrable in men as in women. Since in men the determinant for such wishes does not appear to evolve from an absent penis, it is reasonable to assume that similar determinants in women are also unrelated to an absent penis.

The extent to which child-bearing and child-rearing had been integrated with a sense of femininity and the extent to which the patients had crystallized their sexually based competitive attitudes to other women on the possession of children, determined the intensity of the conviction that their femininity had been injured by the termination of the child-bearing potential. Two of the more extreme reactions are illustrated in the following statements. One patient said, "What the hell good is a woman if she can't have a child?", and the other said, "After my daughter was born I couldn't conceive. I felt incomplete and empty. Women are put on earth to have children."

2. MENSTRUATION AS VALUED FUNCTION

Earlier psychoanalytic theory postulates that women regard menstruation as evidence of a genital wound resulting from castration. Many studies, particularly Chadwick's (6) have emphasized negative attitudes toward menstruation. Some of the patients in our study have also expressed such negative at-

[1] Memorial Center for Cancer and Allied Diseases, 444 East 68th Street, New York, N.Y.

titudes. The majority of the hysterectomy patients, however, deplored the loss of menstruation. This even included a group whose members had suffered considerable dysmenorrhea. The women offered a number of explanations for their feelings of regret. These included statements to the effect that menstruation was part of the normal rhythm of life, that it was an important regulator of other bodily functions, and that menstruation was nature's way of excreting some of the toxic waste products. Whatever the explanation offered, it was clear that the feeling about artificial menopause was one of loss. It indicates that menstruation was a valued function to these women.

Reasonably healthy pre-adolescent girls look forward to the menarche with excitement and anticipation. They often look upon it as the first real milestone on the road to womanhood since menstruation is a distinctively differentiating and feminine function. It heralds sexual maturity and brings the adolescent into the sorority of women. It strengthens her kinship to and identity with other females as do such later events as pregnancy and childbirth. With the termination of menstruation following hysterectomy, feelings of feminine identification may be disturbed and are reflected in feelings of loss of femininity.

3. FEARS OF LOSS OF SEXUAL DESIRE AND FEMININITY

Most of the women in the hysterectomy study expressed concern over the possible loss of sexual feelings. This included women, who in preoperative interviews, indicated disinterest in sexual activity. Reproduction, sexual desire and potency are closely interrelated in the thinking of both men and women so that the abrogation of reproduction is often believed to interfere with sexual desire and attractiveness. Many of the women studied had fears of becoming unattractive, of aging prematurely, and of developing masculine characteristics. A 29 year old woman in psychoanalytic treatment with one of the authors made the following statements about hysterectomy. "Doesn't it make hair grow on your face? I thought hormones were necessary to keep you feminine. Without them you get to be like a man." A twenty-six year old woman stated, "If they do that to me they might as well kill me. They'll turn me into a man if they take my uterus out. A woman is no good without it."

These two women asserted that their femininity was a positive attribute and required the activity of hormones or the presence of the uterus to maintain it. We do not believe that the expressed fears of becoming masculine reflected unconscious wishes to become masculine. Rather, we see this as part of the primitive thinking which holds that male and female are opposite polarities on a sexual continuum. Such thinking is reflected in the idea that if a woman becomes less feminine she becomes more masculine; or that men who become less masculine therefore become more feminine. Male and female are specifically differentiated biologically. Males have attributes which are specifically masculine just as females have attributes which are specifically feminine. In pathological states males may act effeminately or women may adopt masculine-like behaviors, but neither sex can achieve the sexually determined and intrinsic quality of the other. They can only imitate and caricature. For example, a castrated male (*i.e.* an eunuch) has no more resemblance to a healthy sexually active female than an anatomically or functionally castrated female bears any resemblance to a healthy virile male. We regard the expressed fears of becoming masculine as evidence of the fear of injury to femininity.

4. DISTURBANCES IN FEELINGS OF INTEGRITY AND WELL-BEING

Some of the women reacted to hysterectomy as if they had been seriously physically injured. They complained of undue weakness, fatiguability many months post-

operatively, inability to perform previous tasks, changes in patterns of neatness, and orderliness, alterations in the body image, feelings of vulnerability of the genital, paragenital areas and other symptoms of this order. None of these symptoms, however, could be attributed to demonstrable organic pathology.

CASTRATION IMPULSES AND FEARS IN ADULT FEMALES

Castrating impulses, including desires to injure the femininity and sexual attractiveness of other women, were expressed by several women in psychoanalysis. In some instances such wishes were expressed in terms of actually injuring the reproductive organs of other women. A 40 year old nurse presented the following dreams. "A tall blond man was married to a tall blonde woman. The woman had twins and then triplets. After the latter event, the woman visited a physician who employs the nurse (our patient). The woman was examined and was found to be suffering a severe prolapse of the uterus." The following associations to the dream were given. The patient's masculine ideal was a tall blond man, and only a tall blonde woman could be loved by such a man. The patient felt that the degree of uterine prolapse portrayed in the dream would preclude further pregnancies. The dream was interpreted as the patient's willingness to permit her rival to have a limited number of children with the ideal male figure after which she castrated the rival. The same patient after her own delivery by a female obstetrician dreamed that the obstetrician had performed a laparotomy upon her and had left her tubes and ovaries exposed on her abdomen to dry up. In discussing the dream, the patient spoke about her fear and mistrust of the obstetrician. This she recognized as due, in part, to the fact that the obstetrician was childless. The patient also had dreams and conscious fears about women injuring her children.

Many women who are competitive with other women attempt to minimize and inhibit the femininity and attractiveness of those whom they perceive as rivals. Mothers who are functionally castrating to their daughters, interfere with the natural evolution of the girls' femininity. Such mothers are reluctant to dress their daughters in a feminine fashion, do not teach or encourage the development of effectiveness in activities regarded by our culture as feminine such as cooking, sewing, knitting, etc. and they often tend to inculcate in their daughters beliefs that they are awkward and graceless. Rivalrous mothers tend to defeminize their daughters just as mothers who are castrating to their sons tend to demasculinize them. Competitive, defeminizing behavior on the part of adult women to female children indicates that women are aware of a positive bio-social orientation of females to be feminine from early childhood on.

THEORETICAL IMPLICATIONS

Our studies revealed that the women conceptualized their generative organs and the functions associated with them as distinctively feminine. A threat to, actual disease, or removal of these organs were reacted to by the patients as assaults upon their femininity. Femininity was perceived as a positive quality, and as a goal to strive towards, in much the same way that a male strives to be a man. We do not exclude the fact that wishes to have a penis and reactions to the recognition that a penis is absent constitute important determinants in the psychology of some females. We believe that we are adding another dimension to the concept of a female castration complex—a dimension based on injury or the threat of injury to the woman's feeling of integrity as a female. We suggest therefore, that the female castration complex be divided into two distinct entities.

1) Included in the first category are all the reactions and organizations consequent upon the girl's recognition that she does

not have a penis. We suggest that this category be called the *phallic component of the female castration complex.*

2) In this second category are included: a) reactions to the interference with, or injury to feminine development and female functioning and b) reactions to injury or threats of injury (realistically or unrealistically perceived) to the female sexual organs and to the functions which the organs mediate or are believed to mediate. We suggest that this category of responses be called the *feminine component of the female castration complex.*

The phallic and the feminine components are interrelated aspects of the female castration complex and may in some cases become integrated with other psychological constellations. This differs from Freud's formulation in that we conceptualize the feminine component as genetically independent or autonomous. It is not viewed as arising out of or temporally following the phallic phase. We postulate that both components may develop concurrently, interpenetrate, and mutually affect each other.

THE FEMININE COMPONENT OF FEMALE SEXUALITY

Femininity is a quality which reflects biosocial processes. The biological aspects include female anatomy and physiology as well as specific heterosexual excitatory reactions to males. Cultural conditions influence and direct many attitudes and specific behaviors generally regarded as feminine; the culture delineates social functions and roles which women are to perform. Femininity in the adult woman is biosocial and it represents a constellation of attitudes and behaviors which are attractive and sexually exciting to the males of her culture. Any threats to her femininity as the woman conceives of it, is reacted to as a threat of injury. We regard injury or threats of injury in this context as castration in terms of the feminine component (8).

THE GENETIC DEVELOPMENT OF THE FEMININE COMPONENT OF FEMALE SEXUALITY

Before sexual development is discernible, a complex set of attitudes, behavior patterns and interpersonal relationships have already been established constituting the matrix in which sexual organization takes place. The pre-existing personality organization plays a part in determining the nature of the sexual organization, and, conversely, the sexual organization itself will condition the totality of pre-existing interpersonal relationships, personality organization, and behavior patterns.

Infantile masturbation appears to be the earliest observable manifestation of genital sexuality. It usually begins between the sixth and twelfth months. If masturbation is not inhibited by parents or custodians, it continues as one mode of genital activity uninterrupted through childhood, adolescence and into adult life. Masturbation in childhood permits the girl to discover that she possesses organs for sexual gratification. Interference with this important function blocks an avenue for the quieting of excitation, sexual and other, so that the prohibition has the effect of a functional castration. Functional castration can be confused with ideas of anatomical castration in the phallic phase. Freud postulated that early female masturbation is entirely clitoral (10, 14). Since the clitoris is smaller than the penis the girl supposedly derives fewer and less intense sensations from the clitoris than the boy does from the penis. In this sense, the girl is seen to possess an inferior pleasure organ. The relative size of the organs is used as evidence to support the thesis that one organ is more effective as a source of stimulation than the other. This is postulated despite the knowledge that sensation is centered in the glans penis and that the glans clitoris is as richly endowed with nerve endings. Freud also believed that the vagina is not discovered in childhood and does not become an effective pleasure organ

until the woman renounces her phallic strivings and accepts the passive feminine role. Greenacre (11) however, states, "For many years I have had the impression, based wholly on clinical observations, that vaginal sensation does not develop by any means uniformly secondarily to that of the clitoris and certainly does not always await actual intercourse for its establishment, but may be concurrent with or even precede clitoral sensation—I must differ slightly from Freud's idea that children of both sexes know nothing of the vagina early. I am impressed in the analyses that in some female patients there has been some kind of vaginal awareness very early, hazy and unverified though it is."

Heterosexual organization appears to begin somewhere between the ages of two to five years or at that time when the biologically determined capacity to react to the opposite sex with sexual excitatory responses appears. When this is established the girl will manifest a specific sexually determined orientation to males which results in qualitatively different attitudes to men than to women. Because of the special closeness of the child to parents and siblings in the family unit of any culture, heterosexual orientation and reactions invariably and inevitably include members of the family. The Oedipus Complex names this biosocial event for both sexes. Heterosexual organization in our culture, usually if not invariably, includes competitive rivalry and hostility to members of the same sex including family members. The outcome of the oedipus complex depends in large measure on the attitudes of each parent to the child and to each other. The optimal conditions for healthy oedipal resolution are created by parents who are in a constructive love relationship with each other so that neither parent exploits the daughter as an accessory spouse. They recognize, respect, admire and promote the girl's femininity from its inception. The fathers do not reject their daughters and do not shy away from physical expressions of affection because of unconscious incestuous anxieties; the mothers are secure enough about their own femininity so that they do not enter into unrealistic competitive and castrating relationships with their daughters. With a favorable background the girl will identify herself with her mother as a female, be proud and positive about her femininity and enter adolescence with the capacity for a healthy love relationship with a male. When female sexual and personality development proceeds along such lines, the phallic component of the female castration complex plays little, if any, part in adult personality.

THE PHALLIC COMPONENT OF FEMALE SEXUALITY

Freud elaborated a theory of female psychology which in essence continues to be held by many psychoanalysts. The theory rests upon his observations as follows.

1) Female children react to the absence of a penis. These reactions are manifested in urinary behavior imitative of boys, and in the verbalized expression of many little girls who insist that they have a penis or will get one.

2) Psychoanalysis of some adult women reveals explicit wishes to possess a penis, or a symbolic equivalent such as a baby. Some women may show evidences of beliefs of injury and castration in connection with ideas of phallic loss.

From these observations he made a number of assumptions.

1) All female children react to the discovery of the penis. When they find they do not have one they believe that they have been castrated.

2) Castration belief is *the* central determinant about which female sexual and personality development is organized.

3) In an adult woman the wish for a penis or the idea that she has been castrated is more or less a direct projection of identi-

cal feelings in childhood and confirms the existence and genetic importance of such beliefs in childhood.

4) The sexual organization of the female is somehow integrated with her constitutional passivity which permits the attainment of adult femininity.

5) Passivity is somehow related to and derivative of an instinctual masochism which is a predominantly feminine quality.

Freud's observations can be easily confirmed in many female children and adults. The assumptions and inferences based on these observations, however, are open to question. These five assumptions are discussed individually below.

1) *All female children believe that they have been castrated as a reaction to the absence of a penis.*

a) Some of the evidence for this assumption was derived from the psychoanalysis of adult women in whom beliefs of castration were directly associated with the idea that they had lost a penis. No matter how persuasive, the data obtained from adults cannot be used to support hypotheses of normal development. At best such material only provides leads as to what to look for in children.

b) Most of the direct observations of girls who believe themselves to be castrated or genitally injured have been made on children with psychiatric problems. It is most unlikely that there is any single determinant, castration anxiety or other, for the psychiatric disturbances seen in little girls even though frequent representations of castration symbols may be observed.

c) The phobias, anxiety dreams and symptoms of little girls do not differ essentially in character and content from those of little boys of similar ages if the parental figures in the oedipus triangle are reversed. One would expect that if the sexual and personality development of little girls was so different from that of boys, these differences would color the nature and content of symptoms.

d) The fact that little girls express wishes for a penis does not necessarily mean that they either want to be boys or that they feel castrated. When a little boy expresses a wish to have a baby we do not believe that he will suffer a castration complex because he cannot have a baby.

2) *The female castration complex is the central determinant of female sexual and personality development.*

Freud asserted that as a consequence of her recognition of the absence of a penis, the girl believes herself to be castrated. She then turns away from the mother whom she holds responsible, moves towards the father from whom she expects to obtain a baby, renounces her phallic orientation as manifested in clitoral masturbation and finally accepts a passive receptive vaginal orientation. The castration complex is the focal point in this organization. The theory thus defines the castration complex as a construct whose only biological base can be the anatomical difference between the sexes. H. Deutsch (7) stated, "The theory that makes penis envy the basis of her most essential conflicts is untenable. Penis envy is not a primary factor but a secondary one. It is essentially due to a woman's biological passivity which is anatomically and physiologically determined and doesn't specifically require an external factor such as viewing the penis and realizing one doesn't have this organ." Here we see penis envy denied as a central factor but instead biology is invoked without a basis in fact in order to support a biological passivity. Jones (13) remarked in 1927, "There is a healthy suspicion growing that men analysts have been led to adopt an unduly phallocentric view of the problem in question, the importance of female organs being correspondingly underestimated." Jones did not pursue his suspicion to its potentially logical development.

3) *Wishes for a penis and concepts of castration in adult women are a more or less direct projection of identical beliefs held in childhood* and are, therefore, confirmations

of the existence and genetic importance of such wishes in childhood.

We have already asserted that the complexity of adult organization does not justify a one-to-one correlation with childhood organization. Any attitude or belief in the context of *childhood* personality organization must have a different meaning in the context of *adult* personality organization despite apparent similarities. This is in the nature of changing organization (3, 4). It has been our experience that where penis envy, with related feelings of castration, appear as salient features in the psychopathology of adult women, one or more of the following conditions existed.

a) Most of the women who manifested significant penis envy had mothers who were emotionally detached, who did not show any consistent warmth and who were not positively or affirmatively related to the femininity of their children. In many instances, these mothers were overtly and/or covertly destructive. In situations where there were brothers, the mothers frequently openly preferred the males. Penis envy in these instances appears to be dependent rather than the independent variable. Competiveness with a brother tended to reinforce the patient's penis envy.

b) Most of these women manifested significant pathological dependent attitudes. Because of these dependent attitudes, the penis was viewed as an omnipotent magical organ; its acquisition was seen as liberating them from neurotic inhibitions which determined their pathological dependency. The hope was also entertained that the possession of a penis would magically repair injured self esteem.

In reasonably normal female sexual and personality development, the so-called phallic component is a transitory and relatively unimportant phase. Where significant phallic castration reactions appear and continue, we think that these are symptomatic of other psychopathology to be looked for in the direction of the child's relationship to its parents and siblings. In successful therapy when the capacity to function well sexually is established, and when injuries to self esteem caused by maternal rejection and male preference are repaired, fantasies of acquiring a penis as magical solutions disappear.

4) *Sexual organization is integrated with biological passivity.*

Freud probably derived his concept of feminine passivity from the behavior prevalent in the sexually inhibited Victorian Era, when a woman was not supposed to participate actively in courtship behavior and certainly not during sexual intercourse. So-called passivity in either sex is pathological and is secondary to neurotic inhibition of function. Sexually inhibited individuals who are afraid to take the initiative and responsibility for sexual activity, will seek some one else to take the lead and so conceive of themselves as participating passively in the sexual act. More specifically, so-called passivity is a pathologically dependent attitude consequent to inhibition of function (5, 17). That the vagina psychologically represents to normal women a passive organ and the clitoris an active one, is an erroneous concept. Furthermore, the notion that these organs control the woman's attitudes and "vie" for dominance is part of the theory of organ determinism which Bieber (2) has recently attempted to demonstrate as a scientifically untenable construct.

5) *Passivity is related to instinctual masochism*

Freud, in an attempt to ground passivity on a biological base, related it to an assumed instinctual masochism. This instinct supposedly created in the woman the desire to be sexually penetrated. Penetration was conceived as painful. Here again we see the idea that intercourse is an aggressive masculine act which is painfully imposed upon the woman who permits it and enjoys it because she has an instinct to be hurt.

The concept of an instinctual masochism is examined in greater detail by Bieber (4)

and Menaker (15) who have independently shown that many of the phenomena grouped under the general heading of masochism are derived from defensive and reparative reactions in psychopathological organization and that a concept of instinctual masochism is misleading. The material presented in this report supporting the postulate of a feminine component in female sexual development, casts further doubt on the validity of the concept of instinctual masochism.

THE RELATION OF THE PHALLIC TO THE FEMININE COMPONENT

We have proposed that the phallic phase in female development is transitory and does not persist as a significant determinant of behavior except as part of psychopathological organization. If the phallic phase, with its attendant attitudes and behavior, persists as a significant belief system, interferences and distortions in feminine development can and frequently does occur. Inasmuch as wishes to acquire a penis or resentments toward males for possessing one represent the reflections of highly unrealistic thinking when continuing after childhood, the phallico-centric system becomes a determinant of serious psychopathology. The bio-physiological mechanisms operative in the feminine component of female sexuality provide the basis for healthy development and constitute forces against the continuity of the phallic component into adult personality organization.

SUMMARY

A concept of female sexuality is advanced which asserts 1) that the female has a positive desire to be a female, 2) that this desire develops concurrently with and independent of a desire to have a penis and 3) that this desire is a manifestation of a complex biosocial integration. Castration anxiety has been linked by the authors to any perceived injury to either the genital anatomy (real or illusory) or to the functions which the genitals and generative organs are believed to mediate. The female castration complex is divided into two genetically separate though potentially inter-related components: 1) the phallic component, 2) the feminine component. Data derived from a hysterectomy study, from the psychoanalysis of women, and from observations of children are offered in support of this thesis.

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THEORETICAL AND PRACTICAL CONSIDERATIONS OF THE MANAGEMENT OF THE MANIC PHASE OF THE MANIC DEPRESSIVE PSYCHOSIS

JOSEPH D. LICHTENBERG, M.D.[1]

This paper is divided into two parts. The first section deals with the genetic and dynamic problems of the manic patient by presenting a set of premises which in our opinion allow for a rational approach to the patient's treatment. These premises range from those based on clinical observation to unproven tentative constructions. The second section is a description of the practical management of the patient. In it the author endeavors to demonstrate the connection between the practical measures used and our theoretical understanding of them.

In addition to personal experience, three principle sources have been used; "An intensive study of twelve cases of manic depressive psychoses," by a group associated with Chestnut Lodge, Inc. (1); Bertram Lewin's book *The Psychoanalysis of Elation* (2) and the verbal comments of the late Dr. Lewis B. Hill, who was Psychiatrist-in-Chief of the Sheppard and Enoch Pratt Hospital.

TREATMENT PREMISES

THE MANIC PATIENT IS PSYCHOTIC

There are clinical, genetic and dynamic implications of this commonplace statement.

Clinical implications. It is unnecessary here to do more than to point out that these patients show gross disturbance in their reality testing in the areas of mood, behavior, thinking and often perception. These are of course familiar manifestations.

Genetic implications. There has been a maladaptive adjustment in the early stages of life referred to by various authors in different terms, but believed to occur about the end of the first year of life. Abraham (3) speaks of the end of the oral sadistic phase; Klein (4) of the depressive position; and Cohen *et al.* (1) points out the critical phase at the transition point between the disappearance of closeness with the mother based on primary identification, and the emergence of mature relationships based on the recognition of others as whole persons.

All of these observations have in common the belief that the critical phase occurs not long after the child has achieved some ego boundaries as a result of making the "me-not-me" differentiation. That a significant affective disturbance can take place this early in life has been proven by Spitz' (5) observations of anaclitic depressions present in nine months old institutionalized infants who have been separated from their mothers for three months or longer.

In the potential manic depressive patient, constitutional factors may play a part in determining this critical phase, and also in determining mood variability as the predominant symptom. In addition, it is believed that traumatic experiences at this stage of development contribute to the infant's lack of success in forming an integrated view of people. People remain categorized as all-good mothers who satisfy the child's needs, or all-bad, destructive, punishing mothers. The all-good mother remains as an unattainable, yearned-for giver of food (the wish to devour), sheltered relaxation (the wish to be devoured), and undisturbed, dreamless, blissful sleep (the blank dream of Lewin). The bad mother introject is endowed with all of the primitive oral, and, later, anal-sadistic desires the child himself possesses but renounces by projection on to her.

[1] The Sheppard and Enoch Pratt Hospital, Towson, Maryland.

It is postulated that this situation results from, and/or is enhanced by the fact that the mother found the utterly dependent suckling infant more acceptable than the older, more self-sufficient child. As the child's physiological independence increases, his rebelliousness and need for training and acculturation also increases. Mothers who are themselves rigid and prestige-oriented are threatened by this change and label nonconforming behavior as bad—something to be stamped out. "Thus the heretofore loving and tender mother would rather abruptly change into a harsh and punishing figure at about the end of the first year. The child, under the stress of anxiety, would have difficulty integrating the early good mother, and the late bad mother into a whole human being, now good, now bad. . . . An important authority is regarded as the source of all good things, provided he is pleased; but he is thought of as a tyrannical and punishing figure unless he is placated by good behavior (1)."

The future manic depressive patient is often chosen to be the promising child who will satisfy the parental desire for prestige. Unlike some other children who revolt against this doubtful honor, he tends to accept the role and encourage its continuation. Often in the family constellation, he is used by the mother to make up for the failures of the father. Cohen *et al.* observed that a common factor in the sociological status of the families of the patients they studied was that these families were in a transition stage in the social structure—either moving up or down the social scale. The patient was expected to solidify and improve the family's social status. For his contributions he received praise which both he and his family regarded as love but which was really thinly veiled exploitation.

All of these factors set up a circular life pattern based on the hope that stereotyped moralistic conformity will magically bring back the bliss of the good mother (Figure 1, right side).

Dynamic implications. The manic episode may be conceptualized as a failure to main-

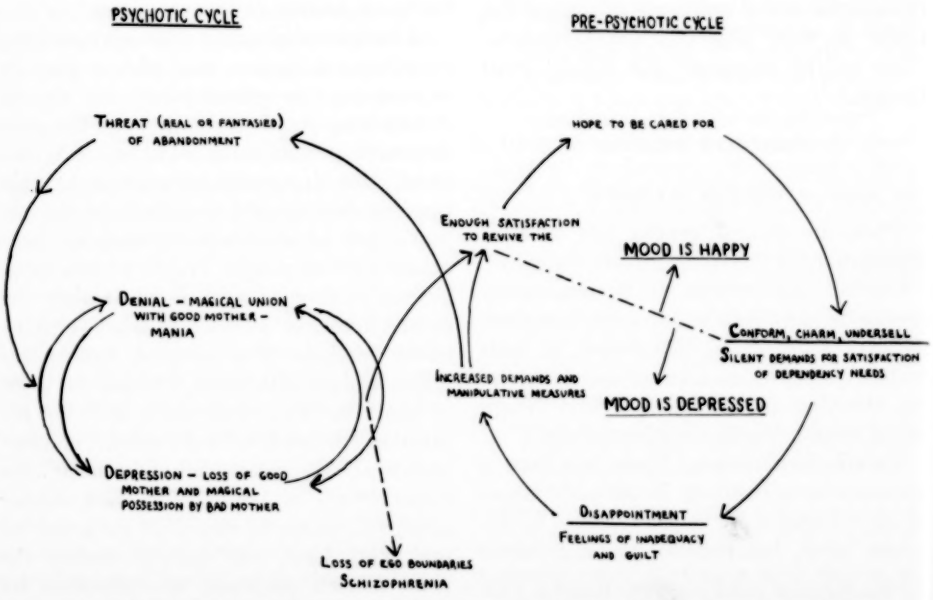
PSYCHOTIC CYCLE
PRE-PSYCHOTIC CYCLE
THREAT (REAL OR FANTASIED) OF ABANDONMENT
HOPE TO BE CARED FOR
ENOUGH SATISFACTION TO REVIVE THE
MOOD IS HAPPY
DENIAL - MAGICAL UNION WITH GOOD MOTHER - MANIA
CONFORM, CHARM, UNDERSELL
SILENT DEMANDS FOR SATISFACTION OF DEPENDENCY NEEDS
INCREASED DEMANDS AND MANIPULATIVE MEASURES
MOOD IS DEPRESSED
DEPRESSION - LOSS OF GOOD MOTHER AND MAGICAL POSSESSION BY BAD MOTHER
DISAPPOINTMENT
FEELINGS OF INADEQUACY AND GUILT
LOSS OF EGO BOUNDARIES
SCHIZOPHRENIA

FIG. 1. Illustration of the major elements of the pre-psychotic and psychotic figures and their interconnection.

tain an economic balance between the id, the ego and the superego. Lewin speaks of the superego vanishing into a union with the ego. This writer is inclined to believe that, rather than this gross merger, there is a failure of some functions of both the ego and the superego. Between attacks and with his defenses intact, the manic patient's ego is a reasonably reliable receptor of internal and external stimuli. On the basis of these stimuli, the superego and the ego cooperate in controlling behavior, thinking, and affect within the bounds of reality. However, his life situation is an unstable one in that he inevitably fails to find the good mother (breast). Moreover, his very methods of seeking it tend to get him rejected. Eventually there occurs a real or feared loss of love of an intensity too great for his usual defenses to manage. The ego now tends to use the mechanism of denial to blot out the threatened loss and the associated depression, and therefore no longer functions as a reasonably reliable receptor of stimuli. The cooperative control of behavior and thinking between the ego and the superego is now based on "misinformation" and a desperate need to preserve the status quo. The lost "good" object is hastily incorporated and there is a contemptuous denial of the negative frustrating aspect of the "bad" mother. The disturbed ego and superego control of behavior, thinking, and affect fails to cope effectively with external reality. The resulting manic state has, as Lewin has pointed out, a symbolic resemblance to sleep in that it is a blotting out of reality and an effort to maintain the status quo. He draws on this analogy between sleep and mania to explain the verbal and psychomotor productions as the result of the same type of psychic work as is responsible for the elaboration of manifest dream content plus much secondary elaboration. As in the dream, this is the product of an effort at cooperative control by the ego and the superego to perform a quick repair of a situation in which impulses are getting out of bounds. It is magical and unrealistic, nevertheless it does fill its intrapsychic function as a temporary stopgap repair of an intolerable situation in which the ego boundaries are preserved from dissolution as in schizophrenia (Figure 1, left side).

It is apparent from the above that the author does not believe the manic patient is really "happy"—the elation and overactivity are defenses against depression and stupor. There is always a segment of ego which is not involved in the process noted above and which remains aware of this inner reality. In describing the affect itself, Lewin believes that there are two states to be considered; hypomania proper and ecstasy. Ecstasy is the state of intense joy and is an expression of the wish to be devoured and to sleep and is derivative of passive pleasures, relaxation, and union with the breast. Hypomania is the state of activity and push and is an expression of the will to live, to stay awake, to devour. The activity as such is derivative of the pleasure of biting and ensuing active processes. Lewin believes both exist simultaneously to varying degrees.

PERSONALITY DEFENSES

The manic patient is continually struggling with his dependency needs. He struggles both to attempt to get them satisfied and simultaneously to deny them to himself and others. The denial is supported by the manic patient's having a number of acquaintances who are charmed by his liveliness, wit, and social aggressiveness. This is a stereotyped social performance and lacks real intimacy. The patient's rigid conformity is accomplished by both obsessive-compulsive techniques to gain prestige tokens and avoid real intimacy, and by hysterical mechanisms to "be attractive." The dependency needs lead to the development of techniques of manipulating and exploiting. The patient does things for others as a means of setting up a silent demand that he be cared for in return. The manic's stratagem of do-

ing for others is to make himself available to others to use, thereby underselling himself and riding to success on the coattails of others. However, tied up with his role as the family's hope for prestige, he is competitive and envious and alert to competitiveness and envy in others. He is afraid of these feelings and keeps them covert by being excessively helpful and by promoting the welfare of siblings, employers and friends.

A major area of personality defense is the manic's use of stereotypes—both in evaluating people and values. People are seen as repetitions of stereotyped parental figures and values are judged by notions of right and wrong taken directly from the parental code and little altered by the person's own experiences. Both people and values are split into good and bad in all-or-none fashion, a continuation of the failure to integrate early part objects into wholes. There is a lack of interpersonal awareness, sensitivity to situations, and to other people's feelings. Even more important is the manic's lack of awareness of the connection between what he feels and what goes on around him. After he has suffered some setback which has caused a minor dip in mood, he is apt to respond to the therapist's question with, "I just began to feel depressed, but nothing at all happened."

THE MANIC PATIENT IS SELECTIVELY DEFENSIVE

The prime fear is that of abandonment—object loss. This is, of course, related to the dependency needs. Along with the fear of abandonment is the fear of feelings of emptiness and depression. The insensitivity in interpersonal relationships guards against the vulnerability to slights and hurts. The stereotyped moral value system is designed to defend against disapproval from authorities both external and internal (the superego). A low sense of self-esteem is always present despite the effort to accumulate prestige tokens and it is associated with feelings of being a fraud, having gained success by manipulation and coattail riding rather than by personal ability. Feelings of envy and competitiveness are hidden under helpfulness and promotion of others.

MANAGEMENT

EARLY MANAGEMENT

Providing a controlled environment. We began by saying that these patients are psychotic and by referring to the clinical picture by which their disturbance manifests itself. The gross manifestations—overactivity, short attention span, flight of ideas, and lack of awareness of their condition leads to the need for protective custody, *i.e.* hospitalization. Limits of a physical nature must be set. The degree of loss of ego-superego control determines the limits of their confinement; quiet admission hall, semi-disturbed hall, or seclusion room. One observation we have made is that the patient may have been exerting a tremendous effort to keep from making a scene outside the hospital, and once in a protective environment, he may relax the battle, thereby appearing more disturbed and requiring more external control than seemed necessary on admission. The patient's relatives should be told of this possibility.

The important duty of seeing that the patient maintains a healthy physiological balance is uppermost in early care. The nature of the illness is such that he often fails to recognize his need to eat. The important question of whether these patients do, or do not feel hunger is unanswered. It has been our experience that the gluttonous patients Abraham described are much less frequently encountered than the patients who show no appetite or interest in food. Even assuming the presence of normal physiological hunger, the manic patient easily distracts himself from his food by a demand for a different kind of napkin and then a tirade about the way he is being treated.

The manic patient may equally well deny, by inattention and behavior, an important

physical disturbance; for example he may dance continuously on a badly sprained ankle, but at the same time complain bitterly of an inconsequential scratch. A careful, complete physical evaluation and a program of treatment of any physical illness is certainly indicated.

Insomnia is one of the most characteristic and most difficult of the manic patient's symptoms. We agree with Lewin that sleep for the manic patient is equated with death in the sense of being devoured and ceasing to exist as an individual. The fear of death is intensified by the strength of the wishes for it. We are not pleased with the results obtained from the administration of barbiturates or related drugs, nor from cold wet sheet packs. For a supportive point of view, the comment of the therapist on parting, "I will see you tomorrow," deals directly with the patient's problem.

To summarize what has been said so far, the burden of responsibility for the care of the patient's overactivity, defective judgment and physical needs rests on the psychiatrist. However, in spite of our efforts to the contrary, the so-called manic flight may spiral upward and the patient may approach a state of physiological exhaustion. We feel that at present the most effective means of interrupting the upward spiralling is by means of chlorpromazine used at first in rather large dosage and then tapered off. We have never been satisfied with electroconvulsive therapy since we have found that enough of this therapy to stop the attack causes the patient to be disorganized in thinking and mitigates against the patient's developing a reality oriented relationship with the physician.

Another extremely important problem in the management of these patients is the prevention of suicide. This is somewhat less of a problem in the early stages of an already well established manic episode than later when controls are relaxed in the belief that the patient is "better." Parenthetically, we believe a period of sudden elation in a depressed patient accompanied by early awakening and diminished sleep, to be pathognomonic of suicidal intent until proven otherwise.

Managing the interrelationship between patient and psychiatrist (transference-counter-transference). Therapists are familiar with the kind of transference attitude the manic patient brings to the treatment situation. He generally denies his need for treatment, makes repeated demands and attempts to play one person off against another. He is often derisive of the psychiatrist's efforts to portray the reality of the situation. He meets refusal of his demands with irritability and often an astonishingly effective mockery and mimicry.

The facts are that the patient has failed in his life adjustment and is unable to manage his own affairs. Yet in his mode of behavior he denies these facts; and he objects to any efforts on the therapist's part to behave in accordance with the facts. We can best maintain this reality orientation by remembering the defensive quality of this type of behavior—it is the patient's resistance to a recognition of reality. A verbal interpretation in the early stay in hospital can be offered to the patient but the primary task of working out of the transference—the establishing in reality the identity of the therapist—can only be accomplished by taking a firm and consistent attitude of refusing to meet irrational demands from the beginning. This is comparable to the analyst's refusal to meet the demands of his analysand for special favors. What follows in the classical analytic situation is that the analysand exhibits his varying modes of response to frustration and gives us a valuable clue to the intrapsychic battle in which he is embroiled. For example, his tone of voice may change and he will assume a tone which often is a caricature of one of his parents dealing with him. One manic patient frequently resorted to an exaggerated sweetness which she later identified as her mother's "telephone voice."

The counter-transference problems vary, of course, with the personalities of the therapists. Often the therapist gets himself in the inconsistent position of trying to accede to some of the patient's unrealistic demands. This is sometimes based on the fallacious notion that "making up" for the patient's infantile deprivations will aid the situation rather than increase the patient's unrealistic fantasy that all his needs can be satisfied by others if he doggedly persists in demanding it. There is clearly no value in attempting to love these patients into health. The patient must learn that he cannot extract from the therapist anything that does not belong in any interested doctor-patient relationship. More often inconsistent handling results from the physician's exasperation with the demands and manipulations of the patient. The psychiatrist may be openly angry and irritable, or he may unwisely meet a demand in the unrealistic hope that "if I just give him this, he will stop this nonsense and get down to work on his problems." There is no gain, and much loss, if the patient learns that he can make the therapist angry.

Another common counter-transference difficulty occurs in the area of competitiveness. A therapist may unconsciously get into a battle with the patient as to who is going to have the last word. The manic patient is attempting to cope with feelings of low self-esteem. One of his life patterns for doing so is to regard situations as challenges and to feel and believe himself in competition with others. He attempts to hide from himself the shallowness of this pattern. This leads to a hauteur and insensitivity to others that can be irksome and play on any problems of low self-esteem the therapist may have, leading him to mobilize his defensive use of competitiveness. This may result in a series of sarcastic interchanges, or a hostile power struggle. Instead of realistically recognizing, labeling, and refusing to comply with the patient's irrational demands, the therapist may get involved in treating him as a naughty child who must be made to obey. Of course, when all else fails, the therapist may just avoid the patient, seeing him as little as possible, or may rationalize some reason for using electroconvulsive therapy unwisely. Because of these problems, we believe that in the early handling it is best to see the patient frequently, often daily, for brief intervals. It is also supportive to the patient to know when the psychiatrist will next visit him.

Managing the interrelationship of the patient and other people in his environment (other patients, nurses and occupational therapists). Two management problems present themselves almost immediately after the manic patient enters the hospital. The first involves preventing the patient becoming isolated from the general patient group; the second has to do with preventing the patient from making himself a target of ridicule. The manic patient, by his failure to recognize the rights of others, his loudness and demands, frequently irritates other patients. This leads to his being shunned or being the recipient of overt or subtle hostility, and only increases his feelings of worthlessness and emptiness. We have attempted to bring this aspect of the problem into general awareness by means of group therapy. One recently admitted manic patient, who took a seat outside the circle of patients, contributed nothing and sarcastically interrupted everyone who spoke. The group ignored him at first, but finally vented on him a barrage of stored-up anger for his behavior. The therapist asked the group to consider what might be the reason for the manic patient's attitude—could it be that he really would like to join the group but was afraid he might not be wanted? After some consideration the group invited him in, and in this case successfully spared the patient a long period of isolation and sulking.

When one considers that the manic patient is suffering from feelings of unworthiness, we recognize that for him to become a target of ridicule further complicates his

problem and may present a real obstacle to his acceptance of himself later. One patient, a competent medical school professor, was noted to be giving medical and psychiatric advice to the other patients. Not only his giving of advice, but the advice itself, clearly reflected very poor judgment. The patient was placed in a seclusion room and it was explained to him that although we recognized his worth as a physician when well, he was now behaving very inappropriately. Further, neither we nor he wanted him to harm himself or others, something which could easily be done with his current poor judgment. The patient, for the first time, seemed to recognize both the presence of his illness and the therapeutic interest of his psychiatrist.

Although the physician sets the limits for the patient, it is the responsibility of the nurses to carry them out and they require much support in doing so. Also, in using occupational therapy as an aid to these patients, it is necessary to bear in mind their distractibility and short attention span, and give them tasks which are brief and not too intricate. We find that we must prevent the occupational therapists from getting swept up in the surges of inconstant enthusiasms of these patients, allowing them to start numerous projects only to finish none. Gymnastic activities and physical exercise can be very useful when limits are set and held.

LATER MANAGEMENT

When the acute early stage of the manic episode is handled successfully, some of the pressure diminishes and the patient comes sufficiently into contact with reality to recognize that he is ill, that he is in a hospital, and that he is being cared for by a physician. At this point we can say that the patient enters the stage of "cooperative verbal interchange." However, the defenses noted above—the demands, manipulations and exploitation—while less gross, remain a very important part of the transference. It continues, therefore, to be necessary for the therapist to recognize all of the patient's irrational demands, label them, and refuse them. At this point an effort should be made to set up rules establishing a frame of reference within which the patient can be responsible for working out his own personal choices and decisions. The therapeutic goal remains that of any intensive psychotherapy—the working through of conflicts to the point where the patient is able to make his own decisions. The problem in recognizing the patient's demands may change somewhat, since there may be many implicit appeals and requests. Whenever this part of the transference is not handled well, defensive use of it will tend sharply to deter therapeutic progress.

A patient had established a good relationship with her doctor, and had charmed him into the unrealistic granting of some special dietary concessions. She persisted in asking for more and more concessions in relation to peculiar food fads. Her therapist, partly to avoid interfering with their "good" relationship, tended to avoid this issue until it blocked therapy sufficiently that the whole problem was reviewed with the patient and all concessions terminated. This was followed by much useful exploration with the patient.

In verbal communication the first and foremost problem is that of penetrating the patient's conventionalized barriers and entering into the area of emotional interchange. Besides demands, the pillars of the conventionalized barrier are those of stereotyped responses and lack of interpersonal awareness. These patients manifest both a stereotyped view of the people as good or bad, and a stereotyped set of values. Both people and values are perceived in terms of black and white.

The therapist is regarded for a time as a moral authority who can successfully be manipulated into giving approval. When this is not forthcoming, he is seen as critical and rejecting, and his words are reworked by the patient into statements of concealed

disapproval. This is often difficult to detect, since the patient gives lip service to the role of the therapist as a noncritical authority while maintaining the belief that this is not so.

One patient who had maintained the notion since childhood that it was morally wrong to smoke, but who did so in rebellious moods, managed to believe that the therapist shared her parents' moralistic disapproval of smoking in spite of his liberal use of cigarettes during interviews. Another patient repeatedly described her fellow employees at a bank as invariably "nice" except for one who was "mean, irresponsible and nasty." Not until late in treatment did she begin to describe qualities in these people which would allow them to be recognized as human beings with their share of faults and virtues.

Associated with stereotyped views of people and values there is a lack of interpersonal awareness which has led some practitioners to regard these patients as too insensitive to utilize intensive psychotherapy. I would submit that this is a defense, and not an inborn "ego deficit." It forces the therapist to be considerably more active in insisting that the patient describe in detail what he experienced at a given time. This kind of patient is markedly unlike the naturally sensitive, introspective patient who easily reports this kind of material. The bank worker mentioned above might still be talking about the "nice" people if the therapist had not taken an active part in interpreting her defense and persistently inquiring about her minor changes in mood. Then, and for the first time, she was able to see that a fellow employee's teasing about mental patients found her vulnerable and hurt.

As we succeed in working through this defensive structure, the patient's dependency feelings come into awareness. As the patient understands his reactions to envious, competitive activity, he will also see how he conceives of himself as having reached success through manipulating others rather than through his own ability. His inner feelings of emptiness become apparent. As he works through his own lack of awareness of interpersonal relations, he begins to see the extent to which he feels vulnerable and is easily hurt. Eventually this leads to the awareness of his fear of abandonment, a principal source of anxiety. He will be able to work through this area only if he has gained some self-esteem and has succeeded in relinquishing the need to regard others as his property, to be manipulated by him.

The necessary self-esteem may come to the patient not by way of interpretation, but through incorporation and identification of the quiet or vigorous self-esteem of the therapist. As we have suggested in this discussion, the therapist with an understanding of genetic dynamic principles may have the experience of helping the patient to re-establish contact with reality in mood and behavior, to limit and recognize his demandingness, and to understand his use of stereotypes and "insensitivity." The patient may be said to go through this experience with the therapist. He may continue for some time in intensive psychotherapy if he has developed some of the therapist's inquisitiveness and recognition of the cost in suffering of his unresolved conflicts. At least he may be willing to return to the hospital early enough in a subsequent manic episode to spare himself a long, severe attack. Needless to say, having the hospital course lead the patient to gain enough insight to seek and carry through long-term intensive treatment is an ideal situation, though one, unfortunately, that rarely occurs. We would speculate that, among others, there are two important factors here involved. Many therapists are more intrigued by the subtleties of meanings in schizophrenic and some neurotic patients than by the gross behavioral communications of manic depressive people. Again, many therapists fail to recognize the

manic patient's resources for using psychotherapy, and are blinded by their defenses.

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LYSERGIC ACID AND ITS EFFECTS ON VISUAL DISCRIMINATION IN MONKEYS

JOAQUIN M. FUSTER, M.D.[1]

The present investigation was undertaken to study the effects of lysergic acid diethylamide (LSD-25) upon the complex behavior of monkeys who were trained to discriminate visual stimuli presented tachistoscopically. This study is an integral part of a more general project designed to correlate some of the behavioral manifestations of visual discrimination with the underlying neurophysiological mechanisms. Earlier results obtained by electrical stimulation of subcortical structures (6) suggested the possible usefulness of the tachistoscopic technique in clarifying some aspects of the action of certain neurotropic drugs. Also, it was felt that the use of drugs conjectured to act upon central systems involved in sensory perception might help to attain the goals of the project. For these reasons LSD-25 was considered to be a good candidate agent for the study. Furthermore, since the phenomenological observation of the transitory effects caused by LSD-25 in man reveals peculiar optic perturbations (13, 14), it was thought that interesting behavioral concomitants of visual discrimination might be manifested by the drug in the subhuman primate.

The neurophysiological aspects of the drug action of LSD have been considered primarily in electrophysiological and biochemical studies. The experimental effects of psychomimetic substances on animal behavior, other than human, are usually either disregarded or unsatisfactorily disclosed, particularly because of the lack of sensitive objective and quantitative methods to carry out their observation. A search for related studies emphasizes the paucity of work utilizing such methods to investigate drug action.

[1] Departments of Psychiatry and Anatomy, University of California School of Medicine, Los Angeles, California. The author wishes to thank Dr. Keith F. Killam for his valuable critical comments on the manuscript. This research has been supported by funds of Grant 2M-6415 from the USPHS.

MATERIAL AND METHOD

Five rhesus monkeys, three males and two females, were trained to discriminate between geometric objects presented in pairs tachistoscopically, *i.e.* in brief exposures. The tachistoscope used as the experimental apparatus is the same as that which has served in other experiments (Figure 1).

The apparatus consists essentially of a one-way vision glass screen separating the animal from the objects utilized as visual cues, and a light source to instantaneously illuminate these objects, which are normally in absolute darkness. A second screen, this one opaque, is normally interposed between the first one and the animal. The training as well as the actual experiments are accomplished by presenting to the animal a pair of stereometric objects, of different shape but similar proportions, in a series of consecutive trials. In this study the objects were a cone and a twelve-sided pyramid, both white. During each session the animal sits in the apparatus, having been adapted beforehand for ten minutes to the semidarkness of the room. For each trial the objects are placed on a black surface on the other side of the screens opposite to the animal. After the opaque screen has been raised and an acoustic warning signal has been sounded, both objects are briefly illuminated for a fraction of a second. The animal has access now to either of the two objects by passing a hand through the corresponding hole at the bottom of the one-way vision screen. These holes are normally

covered by hinged lids. One of the objects (the cone in this investigation) is associated with food by rewarding its selection with a diced piece of apple placed under it before each trial. The position of the correct (rewarded) object, left or right, is changed randomly from trial to trial. The threshold of discrimination, once the task has been learned by the animal, is determined by the proportion of correct responses at each of the various exposure durations. The reaction time, measured from the "on" of the exposure to the moment one of the two doors is opened, is automatically measured.

The exposure duration of 20 milliseconds was selected for the experiment as being close to and above the animal's threshold for the type of visual cues and light intensity (always constant) used. After the animals were trained to discriminate tachistoscopically between the objects, the effects of low concentrating of LSD-25 were tested. Each animal was first submitted to a session of 50 control trials. One hour after the control trials, a dose of LSD-25 was injected I.M., and 15 minutes after the injection, a second series of 50 trials was run. Each session of 50 trials lasted for 25 minutes. The same procedure was repeated one week afterwards with the same animal and the same dose. By this procedure the results on 100 control and 100 experimental (after injection) trials were collected for each animal.

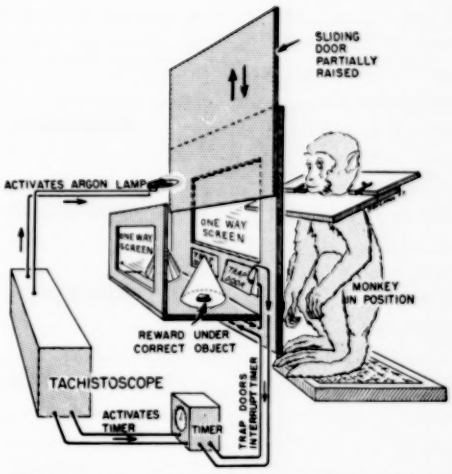

FIG. 1. Diagrammatic view of the tachistoscopic situation. The collar shown around the monkey's neck was used for restraining purposes.

TABLE 1

Compiled Results of Experiment

Subjects	% Correct Responses		Mean Reaction Time in msecs.	
	Control	Drug	Control	Drug
M1	95	75	485	623
M2	97	77	520	614
M3	97	82	545	559
M4	92	78	489	631
M5	90	57	496	644
N = 5 Grand means	94.2	73.8	507	614.2

RESULTS

The administration of LSD-25, at doses between 2 to 8 gamma per Kg. of body weight, proved to impair the performance of tachistoscopic discrimination. The results from the five animals are represented in Table 1 and Figure 2. The effects in the performance[2] are as follows:

1. A significant difference ($p < .001$) was observed in the number of correct responses between the control and the drug series. Accuracy in the drugged state is considerably reduced as compared to the control situation.

2. The difference in the mean reaction times was similarly shown to be significant ($p < .03$). The response time in the discrimination task was prolonged after the administration of the drug.

The impairment of the tachistoscopic performance, in some cases dramatic as indicated by both sets of measurements, was not

[2] A statistical analysis of the data was carried out. Analysis of variance was used on transformed scores of both the correct responses and the reaction times. I am indebted to Dr. Wilfrid Dixon for his aid in the statistical analysis.

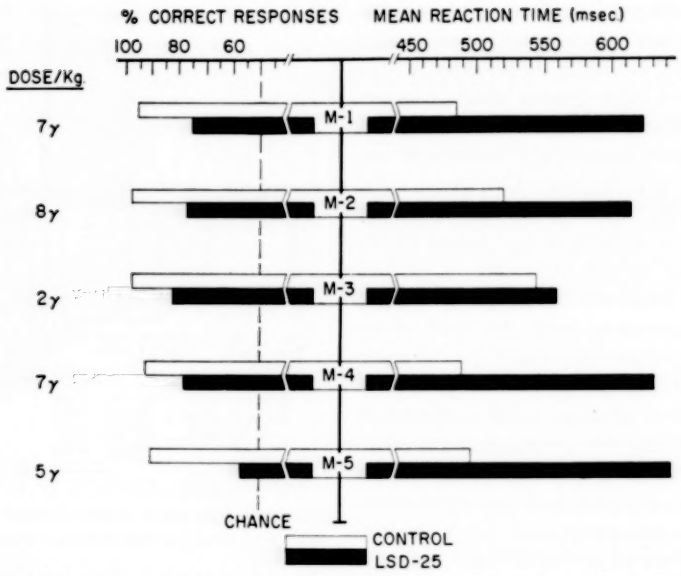

FIG. 2. Graphical representation of the effects of LSD-25 on the tachistoscopic performance

otherwise accompanied by any modification in the apparent behavior of the animals.

DISCUSSION

The results of this investigation indicate that LSD-25 at a low dosage alters the behavior of the animals in the two considered aspects of the experimental situation, *i.e.*, the threshold of tachistoscopic discrimination, which is raised, and the reaction time in the performance, which is prolonged.

From an objective point of view it is difficult to determine from the present study the neural elements participating in the animal performance which are affected by LSD-25. The results, however, are particularly relevant when examined in the light of the body of knowledge on the pharmacology of the drug.

There is electrophysiological evidence at present indicating that LSD affects conduction and/or reception of impulses at various levels in the central nervous system. The sensory pathways and their ganglia have been explored, and among them special interest has been focussed upon the visual system, presumably as a consequence of the phenomenology of the effects exerted by the substance in man.

Interference of lysergic acid with the normal conduction of impulses along the specific visual pathways has been experimentally demonstrated. Evarts and Marshall (5) showed in the cat that the transmission of impulses is hindered by LSD at the level of the lateral geniculate body. This inhibition, interpreted as a consequence of an induced hypoexcitability of the geniculate, is equated by Evarts and Hughes (3) to the state of "physiological subnormality" induced by mild tetanic stimulation of the optic nerve. Evarts and collaborators (4) however, by studying the amplitude of the potentials elicited in the visual cortex by stimulation of the optic radiation fibers, do not find any depressant effect of LSD in the cortex. Yet Purpura (11) has shown enhancement of these evoked potentials in the visual cortex by administration of low doses of LSD to the cat. If this phenomenon is inferred to be correlated with an increase of neuronal excitability and with a concomi-

tant descent of threshold to impulses arriving at the visual cortex, the evidence of impairment in visual discrimination seems to conflict with such as inference. Nevertheless, as we shall see, the cortical effects of the substance appear to be more elaborate.

A selective blocking effect of LSD, as described by Evarts and Marshall, at the level of the geniculate could be responsible for an impairment of visual perception in tachistoscopic performance. However, the effect in the geniculate seems to be a part only of a broader action in the CNS. Purpura (12), citing histological evidence from Glees (7), points out the fact that there is a predominance of axodendritic synapses in the lateral geniculate body. It is because of the particular susceptibility of this type of synapses to the drug, as later discussed, that the effects at the thalamic nucleus can be understood and interpreted.

Marrazi and Hart (10), studying the effects of lysergic acid on evoked transcallosal potentials in the visual cortex, conclude that the drug has a general inhibitory effect upon the synaptic transmission in the brain, in a similar fashion as other hallucinogenic substances whose chemical and pharmacological kinship with adrenaline the authors emphasize.

The importance of synaptic action of lysergic acid has been repeatedly pointed out. Purpura (12) finds evidence for a differential action of LSD on axosomatic and axodendritic synapses. He demonstrates a facilitation upon the former and an inhibition upon the latter. Such effects are observed under quite low doses of LSD to the experimental animals, doses which approximate the ones utilized in the present study and are comparable to those which produce the psychological effects in humans. The distinction between the two types of synapses appears relevant because of the physiological implications of this distinction. Axosomatic synapses are those in which the nervous fiber (axon) contacts the neuron at the level of the cell body, whereas in the case of the axodendritic synapses, the axon terminates by contacting the dendrites of the neuron. The axosomatic type of synapse is characteristic of the connections established by the specific sensory transmitting fibers in the primary sensory areas of the cortex. The axodendritic type is found in the diffuse nonspecific systems of the brain and at the termination of their fibers in the cortex; in this manner the fibers ascending from the diffuse thalamic system and the reticular structures of the mesencephalon establish contact with the cortical neurons. There is considerable evidence indicating that axosomatic synapses are responsible for the electrophysiological transactions that determine the arrival of sensory messages to the receiving pyramidal cells of the cortex, while the level of excitability of these cells to such messages is governed by the electrotonic influences of the nonspecific reticular systems of the brain stem exerted through axodendritic connections (1, 2). These influences, as it is commonly accepted, are responsible for the general state of "arousal" of the cortex, by which, presumably, wakefulness of the organism is obtained and maintained (9). In this connection it is interesting to note that Killam (8) has shown that LSD elevates the threshold of EEG arousal to reticular stimulation.

It is pertinent to consider the results obtained in the present LSD work with those using the same method and under different experimental condition. A current investigation of the effects of electrical stimulation of some structures of the brain (a preliminary report published by Fuster, 6) has yielded data which helps to interpret the role of the nonspecific reticular system of the brain stem. These data indicate that mild electrical stimulation of the reticular core of the mesencephalon tends to facilitate tachistoscopic discrimination. This facilitation is manifested in increments of correct responses and reduction of reaction time; it can be interpreted as the expression of an artificial elevation of reticular tonus, with

a consequent increase of the animal's general alertness. LSD-25, as seen in the present investigation, has opposite effects upon the behavioral indicants. To this extent, the deleterious influence of LSD-25 in the attention-requiring tachistoscopic task is consistent with its postulated inhibitory action upon the axodendritic synapses. For, if reticular tonus is correlated with the degree of general alertness of the organism, an interference with the mechanism by which it is mediated appears to be one of the most probable ways in which the drug disrupts perceptual discrimination. It is not justifiable to propose this as the only action of LSD in the brain, but it can be said that it may certainly be the one which is responsible for the demonstrated elevation of visual threshold and slowness of motor performance as verified by the present study. It appears probable that there are some other concomitant effects of the drug, as suggested by the evidence of axosomatic facilitation which, in addition to the general de-activation previously described, can be the cause of the disorganization of the sensorium demonstrated in humans. It is conceivable that there is a transient activation of some sensory elements (by facilitation of some axosomatic connections), while the general field of external perception is beclouded. The appearance of illusions and hallucinations may be determined this way. The behavioral technique described in this paper is not suitable to test the latter hypothesis.

SUMMARY

Lysergic acid diethylamide (LSD-25) administered to monkeys in small dosage has clear effects on tachistoscopic perception. These effects are verified in the two studied variables: a) the percentage of correct responses in discrimination of briefly presented visual cues, and b) the reaction time to the presentation of these cues. While the percentage of correct responses is lowered, the reaction time is considerably increased by the drug. The effects are proposed to be explained by an inhibitory action of the drug upon the axodendritic synapses of the central nervous system. A LSD-25 inhibition of the cortical terminal synapses of the cerebral reticular structures appears to be corroborated by the results of the present behavioral study.

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DIFFERENTIAL EFFECTS OF LATERALIZED BRAIN LESIONS ON THE TRAIL MAKING TEST

RALPH M. REITAN, PH.D.[1] AND ELAINE L. TARSHES, B.A.

Two recent studies (13, 15) have presented results on the Trail Making Test comparing groups of subjects with and without brain damage. The first of these studies compared two small groups of subjects (N = 27) who were arranged in pairs matched for color, sex, age, and education. The results indicated that a total of approximately 17 per cent of the patients were misclassified. The proportion of misclassified patients was about the same in both groups. The second study was based on 84 control subjects and 200 brain-damaged subjects. The results indicated a total misclassification of 14.8 per cent of the subjects. Among the controls there were 16.7 per cent misclassified and among the brain-damaged subjects, 14.0 per cent. The cut-off point best differentiating the two groups was the same in both studies.

Possible reasons for the excellent differentiation of groups with the Trail Making Test relate to certain specific abilities required by the content and procedure of the test. The content, which consists of numbers on Part A and numbers and letters on Part B, requires a subject's ability to recognize the symbolic significance of numbers and letters. The stimulus material composing each part of the test is arranged in a spatial configuration on an 8½ x 11-inch sheet of paper. Some ability in spatial organization also is required of the subject. These aspects of the test suggested an hypothesis for experimental investigation that was concerned with the differential functions of the left and right cerebral hemispheres.

For many years investigators have associated language functions with the left cerebral hemisphere (7, 16, 17). As early as 1836 the French physician, Marc Dax, noted that speech impariment is much more frequently associated with partial or complete paralysis of the right rather than the left extremities (11). Patients with lesions of the left cerebral hemisphere frequently manifest a variety of difficulties involving use of language symbols for communication. Difficulties of this type may be both receptive and expressive in nature (3).

Within the last several years a number of investigators have presented evidence describing a different order of behavioral deficiency associated with damage to the right cerebral hemisphere. Several neurologists and psychologists (2, 4, 6, 8, 9, 12) have presented results relating serious difficulties in manipulating, ordering, or effecting spatial relationships to damage of the right hemisphere.

These findings, suggesting lateralization of different abilities in the cerebral hemispheres, considered in relation to the requirements of the Trail Making Test, represented the basis for the hypothesis of this study. Specifically our prediction was that patients with damage lateralized to the left cerebral hemisphere would perform more poorly on Part B with relation to their performance on Part A than patients with damage to the right cerebral hemisphere. This prediction was based on our feeling that the limiting factor in a good performance would vary depending upon the hemisphere damaged. We anticipated that the limiting factor for patients with lesions of the left hemi-

[1] Department of Surgery, Indiana University Medical Center, 1100 West Michigan Street, Indianapolis, Indiana. This study was supported by Grant B-1468 from the National Institute of Neurological Diseases and Blindness, National Institutes of Health.

sphere would be their impaired ability to perceive and use the symbolic material represented in the content of the test. Consequently, Part B of the test involving both numbers and letters would represent a much more difficult task for them than Part A which involves numbers only. In patients with lesions of the right hemisphere, however, we postulated that the limiting factor would be the ability to comprehend the spatial configuration of the stimulus material. Since the stimulus material in both Parts A and B is distributed approximately equally in space, we expected that the difference in performance between the two parts would be less for this group than for the patients with damage of the left hemisphere.

SUBJECTS

Three groups of subjects were used. One group consisted of 44 patients with maximal damage of the left cerebral hemisphere who were distributed among diagnostic categories as follows: cerebral vascular disease, 12; intrinsic brain tumor, 11; extrinsic brain tumor, 5; temporal lobe epilepsy, 5; traumatic head injury, 4; infantile hemiplegia, 2; cerebral abscess, 2; and one each with cerebral atrophy, subdural hematoma, and metastatic carcinoma of the brain. Another group was composed of 50 patients with maximal involvement of the right cerebral hemisphere. These patients were distributed among the following diagnostic categories: cerebral vascular disease, 12; intrinsic brain tumor, 11; traumatic head injury, 6; extrinsic brain tumor, 4; cerebral abscess, 4; metastatic carcinoma of the brain, 4; temporal lobe epilepsy, 3; subdural hematoma, 3; cerebral atrophy, 2; and cerebral cyst, one. A third group was composed of 46 patients with diffuse cerebral damage or focal cerebral damage involving both hemispheres and included the following diagnostic distributions: traumatic head injury, 14; multiple sclerosis, 12; generalized cerebral atrophy, 7; degenerative brain disease, 5; diffuse cerebral vascular disease, 3; dementia paralytica, 2; and one each with subdural hematoma, barbiturate intoxication with cerebral involvement, and post-encephalitis.

The group with lesions of the right hemisphere had a mean age of 38.12 years (range, 16–69). Comparable values for the group with lesions of the left hemisphere were 40.02 years (range, 17–71) and for the group with diffuse involvement, 38.57 years (range, 18–64). Means for education were as follows: right hemisphere group, 10.82 years (3–19); left hemisphere group, 10.64 years (6–20); and diffuse group, 9.83 years (3–17). There were no significant differences between age or education in any of the group comparisons.

Testing of the patients was performed after maximal benefits of hospitalization had been realized and the patients were ready for discharge, although many had positive clinical neurological findings at the time of testing. The patients were probably fairly characteristic of ones generally seen at a University medical center. The patients were tested by a total of six examiners over a period of approximately five years.

PROCEDURE

The Trail Making Test has been described in some detail previously (1, 5, 13, 15). The test is composed of two parts, each consisting of 25 circles distributed over a white sheet of paper. In Part A the circles contain numbers from 1 to 25. The subject is required to draw a line connecting the circles in numerical sequence as quickly as possible. Part B differs from Part A in that the circles contain either numbers or letters ranging from 1 to 13 and from A to L. In connecting the circles the subject is required to alternate between numbers and letters as he proceeds in ascending sequence. For this study the test was scored as the number of seconds needed to finish each part. The procedure for administration of the test followed the instructions given in the Manual for the Trail Making Test (14) instead

of the Manual for the Army Individual Test from which the Trail Making Test originally came.

Since Part B customarily requires more time for completion than Part A, a decision was made to combine the three groups and convert the raw score distributions to ranked T-score distributions. Thus, a mean of 50 with a standard deviation of 10 was obtained for the combined groups on each part. The conversion was done in such a way that the highest T-score corresponded with the poorest performance. The individuals were then returned to their respective groups. Means based on T-scores were obtained for each group on both Parts A and B. Next, T-score differences between Parts A and B were obtained for each individual. The means of these difference-score distributions were then compared for each pair of groups in order to determine the probability that the mean differences could be attributed to chance. Finally, the best cut-off point for differentiating the groups with left cerebral and right cerebral damage was obtained and the proportion of overlap in the distributions determined.

TABLE 1

Means and Standard Deviations in Seconds for Three Brain-Damaged Groups on Parts A and B of the Trail Making Test

	N	Part A	Part B
Left cerebral Lesions			
Mean	44	53.27	229.98
S.D.		25.46	154.09
Right Cerebral Lesions	50		
Mean		76.88	209.62
S.D.		56.48	242.12
Diffuse Cerebral Lesions	46		
Mean		59.39	183.13
S.D.		30.15	104.68

TABLE 2

Mean T-scores for Parts A and B of the Trail Making Test and Difference Scores Between Parts A and B for Three Brain-Damaged Groups

		Part A	Part B	Part A minus Part B
Left Cerebral Lesions		47.52	52.52	−5.00
Right Cerebral Lesions		52.22	48.52	3.70
Diffuse Cerebral Lesions		49.93	49.13	.80
Right vs. Left	t	2.18	1.89	5.76
	$p<$	.05	.10	.001
Right vs. Diffuse	t	1.11	.29	1.96
	$p<$	.30	.80	.10
Left vs. Diffuse	t	1.26	1.71	3.97
	$p<$	.25	.10	.001

RESULTS

Table 1 presents means and standard deviations for Part A and Part B in terms of the raw score in seconds. Obviously Part B required more time for completion than did Part A for each group. Interestingly, however, the group with left cerebral damage required the least time of the three groups on Part A and the most time on Part B. The group with damage of the right hemisphere required the most time on Part A and an amount of time intermediate between the other groups on Part B. Formal testing of the differences between the groups, however, was based upon normalized T-score distributions in order to achieve improved validity in intergroup comparisons by standardization of variance.

Table 2 presents means based upon normalized T-score distributions for Parts A and B, mean differences between Part A and Part B, and t ratios based on intergroup comparisons.

Since the mean of the T-score distributions for the combined groups on each part is 50, the comparative performance of the three groups can easily be observed. On Part A the group with damage of the right hemisphere had the poorest performance (highest T-score) whereas the group with damage of the left hemisphere had the best performance. The group with diffuse cerebral damage occupied an intermediate position. On this part the only significant difference in intergroup comparisons occurred between the groups with lateralized lesions. The left hemisphere group did significantly better than the right hemisphere group

($p < .05$). On Part B the comparative performances of the groups with lateralized lesions was reversed. The group with lesions of the right hemisphere had the best performance, followed in order by the diffuse group and the group with left cerebral damage. None of these differences, however, was statistically significant although the group with left cerebral damage tended to perform more poorly than either of the other groups ($p < .10$).

The more striking differences between the groups appeared in their comparative performance on Parts A and B. The patients with damage to the right cerebral hemisphere performed relatively well on Part B in comparison with their performance on Part A. Conversely, the patients with damage of the left cerebral hemisphere did relatively poorly on Part B as compared with their results on Part A. The performance of the patients with diffuse cerebral damage was approximately equivalent on both parts. Intergroup comparisons of the difference scores between Parts A and B indicate a significant difference between the groups with lateralized lesions ($p < .001$) and the groups with left hemisphere and diffuse damage ($p < .001$). The group with right cerebral damage tended to differ from the group with diffuse damage but this difference would have occurred on a chance basis between 5 and 10 times in 100 comparisons.

TABLE 3

Distributions of Differences Between T-scores on Parts A and B of the Trail Making Test for Three Brain-Damaged Groups

	Trail Making Test: Part A minus Part B	Left Cerebral Lesions		Right Cerebral Lesions		Diffuse Cerebral Lesions	
+	15–19	0		2		0	
	10–14	1	25.0%	11	72.0%	6	50.0%
	5–9	2		13		6	
	0–4	8		10		11	
−	5–1	13		8		16	
	10–6	14		3		5	
	15–11	2	75.0%	3	28.0%	1	50.0%
	20–16	3		0		1	
	25–21	0		0		0	
	30–26	1		0		0	
	N	44		50		46	
	Mean	−5.00		3.70		0.80	
	S.D.	6.89		7.47		6.82	

The distributions of difference scores between T-scores for Parts A and B were composed for each group.

The best cut-off point for the distributions of patients with lateralized lesions occurred between 0 and −1. Of patients with damage to the left cerebral hemisphere 75 per cent had difference scores of −1 or less, indicating a comparatively poorer performance on Part B than on Part A. Conversely, 72 per cent of the group with right cerebral damage had difference scores from 0 to positive values, indicating comparatively better performances on Part B than on Part A. The group with diffuse cerebral damage was exactly equally divided on either side of the criterion point.

DISCUSSION

The results indicate that patients with lesions of the left hemisphere had considerably more difficulty with Part B (involving both numbers and letters) with relation to their performance on Part A (involving only numbers) than did the other groups. The group with right cerebral damage, on the other hand, performed comparatively better on Part B with relation to Part A than did the group with damage of the left hemisphere. Thus, the hypothesis of this study was clearly confirmed.

The results appear to have two distinct implications. First, this study represents one of the few instances of controlled comparisons using a standardized psychological test in which differential effects of lateralized cerebral lesions have been demonstrated. The varying effects of damage to the two hemispheres should be emphasized in consideration of the large number of studies that have ignored lateralization of maximal brain damage as a possibly significant independent variable. More important, however, is the provision of an additional piece

of evidence with respect to the organization of behavioral functions associated with brain damage.

The second implication of the findings concerns the use of the Trail Making Test for clinical inferences regarding lateralization of maximal brain dysfunction in human patients. The relatively small overlap (about 27 per cent) in comparative performance on Parts A and B of the groups with lateralized damage suggests that the results eventually may be of supplementary value for inferences concerning maximal involvement of the left or right hemisphere. Clearly, however, this possible use of the test is attenuated by the equal distribution of the patients with diffuse damage on either side of the cut-off point.

The clinical usefulness of results such as those found in this study is also dependent upon the "base rate" in the groups compared, as pointed out recently by Meehl (10). We do not have information regarding the differential frequency of patients with diffuse brain dysfunction as compared with patients having lateralized brain damage. One should note that the possibility exists, however, that the proportions of patients falling in these categories may be sufficiently different so that a small proportion of misclassifications in one group may represent a sufficiently large absolute number of patients to outweigh the number of correct classifications (even though proportionately high) in a smaller group.

SUMMARY

The Trail Making Test was administered individually to 44 patients with lesions of the left cerebral hemisphere, 50 patients with lesions of the right cerebral hemisphere, and 46 patients with bilateral or diffuse cerebral involvement. No significant intergroup differences in age and education were present. Intergroup comparisons of absolute levels of performance on Parts A and B showed only one difference reaching the .05 level of confidence. In this instance, the group with damage of the right cerebral hemisphere performed more poorly than the group with damage of the left cerebral hemisphere on Part A. Difference scores between Parts A and B for individual patients in the three groups showed highly significant differences. The left hemisphere group performed significantly more poorly on Part B with relation to its performance on Part A than did either of the other groups. The right hemisphere group had the least difficulty with Part B as compared with its performance on Part A, differing significantly from the left hemisphere group but not quite from the diffuse group. Significant differences in line with prediction were thus obtained relating to the differential behavioral significance of lateralized brain lesions.

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SOMATO-PSYCHOLOGIC STUDIES IN PARKINSON'S DISEASE

I. An Investigation into the Relationship of Certain Disease Factors to Psychological Functions

MANUEL RIKLAN, Ph.D.,[1] HERMAN WEINER, B.A. and LEONARD DILLER, Ph.D.

Since first described in some detail by James Parkinson in 1817 (40), Parkinson's Disease, or paralysis agitans as it is sometimes referred to, has had a considerable amount of clinical and research attention devoted to it. Most recent investigations indicate that this symptom complex is most likely to appear when there is mild but diffuse damage of the basal ganglia (37). Numerous observations in man suggest that it is primarily the pathology of the globus pallidus and substantia nigra which may produce the rigidity and tremor associated with the disease (13, 18). The etiology of parkinsonism is usually attributed to a variety of factors which customarily include encephalitis lethargica, arteriosclerosis, trauma, syphilis, manganese intoxication, etc. (14).

Although much is now known, numerous questions remain, and this illness thus continues to represent a significant gap in our neurologic knowledge. For this reason recent years have witnessed an intensification of investigations. Research in this field includes a number of studies dealing with the psychologic and psychiatric aspects of parkinsonism. The interest in these particular areas can be attributed, in part, to the variety of psychological symptoms associated with the illness and to the evident lack of certainty in regard to its etiology. Two main lines of psychologic investigation can be delineated. On the one hand, there are a group of studies suggesting various psychogenic factors for certain symptoms of the parkinsonian complex. Thus, Sands (45) hypothesized a "peculiar type of personality which later develops a parkinsonian syndrome." They are always "in a state of emotional tension, either brooding or constantly worrying." The "masked personality," frequently found in patients with this illness, he attributes to early suppression and later repression of their emotional reactions, "concealing the continuous turmoil that exists within them." On the basis of analyses of case histories and Rorschach protocols, Booth (3, 4) concludes that parkinsonism, postencephalitic as well as senile, is a "syndrome which is characteristic of a specific personality type." He feels that the parkinson personality is characterized by "an urge toward action, striving for independence, authority and success within a rigid, usually moralistic, behavior pattern." In his studies of parkinsonian case histories, Jelliffe (22, 23) reports that certain symptoms, specifically the oculogyric crisis and body posture difficulties, have a psychodynamic origin reflecting, in part, drive inhibition most notably where unconscious hostility is involved.

In contradistinction to what might be described as a psychogenic approach to parkinsonian etiology, a number of recent studies have assumed a neurologic basis for the illness, and have been concerned with psy-

[1] The Psychological Services of St. Barnabas Hospital for Chronic Diseases and the New York University Post Graduate Medical School. This investigation was sponsored in part by the Sister Elizabeth Kenny Foundation; Office of Vocational Rehabilitation, Department of Health, Education, and Welfare; and the Allen P. and Josephine B. Green Foundation. The authors wish also to express their gratitude to Dr. I. S. Cooper, Director of the Department of Neurologic Surgery at St. Barnabas for his cooperation and encouragement, and to Miss Jodi Wood, research assistant to the Psychological Services, St. Barnabas Hospital.

chological effects. Critchley (11), writing primarily in regard to arteriosclerotic parkinsonism, points out the diverse mental and emotional effects of the disease process. In recent years others (19, 39, 48) have been concerned with psychological and psychiatric factors concomitant to post-encephalitic parkinsonism. In most instances it was found that the patients demonstrate some intellectual deficits. Moreover, Nyssen and Wens (39) believe a correlation to exist between the severity of the parkinsonian syndrome and the degree of intellectual loss. Kral and Dorken, in a series of Rorschach studies on patients with diencephalic lesions (26, 27), primarily parkinsonians, point out that color responses in this group tend to be minimal or absent and conclude that the diencephalon plays an important role in emotional responsivity.

In clinical studies ranging over a period of several years, Schwab and others (43, 46, 47, 52), have evolved the concept of stress as crucial to the understanding of both the psychological functioning of the patient and the nature of the disease process itself. It was found furthermore that the basic personality type may determine the adequacy of a patient's response to periods of stress. Schwab has hypothesized that prolonged periods of stress might even produce changes in the nerve cells stimulated and thus cause permanent vascular changes in the midbrain and basal ganglia.

Recently, Machover (36), in a Rorschach study of Parkinson's Disease, found a significant degree of personality heterogeneity among short duration parkinsonians, and in contradistinction, found that a high degree of personality homogeneity existed in the long duration group. In the latter group he found a consistent pattern of constriction, rigidity, and inertia, which he attributes to "the sheer experience of living with the illness." Diller and Riklan in their series of psychologic studies of a large group of parkinsonians who were seen prior to undergoing neurosurgery (16, 17, 18) were likewise impressed by the variety of personality patterns found in their group. They found, however, that certain historical and familial factors were significantly related to the patient's response to his disease. Most notable was the pattern of adjustive difficulty associated with males who come from broken homes. A significant finding was that reaction to stress, as judged by clinical tests, seemed to be a crucial determinant of post-operative mental status (18). Finally, the parkinsonian was found to differ from other subjects in the manner in which inhibition or impairment of movement influences his responses to the Rorschach test (17). This suggests that the neurophysiologic factors underlying the patient's impairment of movement also influence his apperceptive responses.

Other diseases of the central nervous system have had a certain amount of psychological research attention devoted to them, especially insofar as intellectual functioning is concerned. Recent studies on the intellectual functioning of patients with multiple sclerosis (2, 6, 15) present somewhat conflicting results. Diers and Brown (15) report no significant organic mental impairment for their group, while both Canter (6) and Baldwin (2) report some deficits in at least a certain portion of their groups. Collins (8), working with a large group of epilepties, reports "little evidence of deterioration" except in cases which definitely result from traumatic brain damage. He concludes that mental deficit is not necessarily a concomitant or a result of epilepsy. The literature on mental functioning in neurologic disease is rather meager and conflicting to some degree. Findings usually reflect the condition of the specific experimental group involved. Further investigation is certainly warranted in this area.

Current neurophysiological evidence on Parkinson's Disease points to a disturbance or damage, probably in the basal ganglia, as the basis for the disease. Although some early researches on the psychological as-

pects of this illness have tended to emphasize psychogenic factors, more recent literature can be described primarily as somatogenic in its approach. To the present time, however, there have not appeared any studies which measure specific parkinson symptom components in order to assess their relationship to cognitive and personality functioning. Such measures of symptom severity would seem to be a promising approach to the study of the somato-psychologic relationships in Parkinson's Disease. It is the purpose of this report to delineate those measurable disease factors which appear related to psychological functioning.

DESIGN OF THE STUDY

During a period of some four and a half years we have had the opportunity to conduct psychological evaluations on several hundred parkinsonians before and after alleviative neurosurgery. Known as chemopallidectomy and chemothalamectomy, these neurosurgical techniques were developed in recent years by Cooper (9, 10). For the purpose of this investigation, we have selected a pool of 220 consecutive patients to whom were preoperatively administered, among other tests, the Wechsler-Bellevue Scale Form I, the Rorschach, the Bender-Gestalt and Human Figure Drawings. This group consisted of various types of parkinsonian patients whose age averaged 54 years, and ranged from 31 to 69 years. It included 142 males and 78 females. The average length of illness for the group was 8.1 years (range 1 to 33 years), and the average education was 10.9 years. Their social, economic and geographic background varied widely. The following five factors were selected as potentially significant in determining the type of psychological effects found in parkinsonism. The first two, while not necessarily integral to Parkinson's Disease, have previously been cited as influential factors in both personality and intellectual functioning.

1. *Duration of illness.* The length of time an individual lives with a chronic illness has long been considered a significant determinant of psychological effects. In a recent study (16) it was reported that duration of illness in parkinsonism was significantly related to personality functioning.

2. *Age.* Numerous studies have been reported which indicate that the aging process has concomitant to it certain cognitive, intellectual, and personality changes (1, 34).

The following three symptom categories are commonly considered intrinsic to parkinsonism or closely associated with it, and were selected as measurable and representative of the most incapacitating aspects of the disease.[2]

3. *Autonomic nervous system symptoms.* Certain aspects of emotional and psychological behavior are known to be related to antonomic nervous system functioning (5, 12, 29, 30). Utilizing the neurologic examinations which included ratings[3] of nine autonomic symptoms such as hyperhydrosis, hypersalivation and tachycardia, we were able to establish percentage scores for each patient. In each case the score was the ratio of symptoms present over the total number of symptoms rated.

4. *Rigidity.* Among parkinsonians are found varying degrees of neuromuscular rigidity. Nyssen and Wens (39) had previously reported a relationship between the severity of the disease and intellectual loss. Our ratings of degree of rigidity were taken from the neurologic evaluation given each patient preoperatively and are based upon a 5-point scale. The score used was the mean rigidity for the four extremities.

5. *Voluntary movement impairment.* For each patient fifteen areas of functional voluntary movement were rated as present or absent. These included ability to get out of bed, ability to walk alone, weakness, etc. These ratings were then converted into per-

[2] Tremor was not utilized because of the relative unreliability in its objective evaluation.

[3] Inter-rater reliability coefficients: Rigidity—$r = .89$, Voluntary movement impairment—$r = .81$. In all cases $N = 25$.

centages based upon the ratio of the number of items the patient was unable to carry out to the number of items under consideration. A series of previous studies by Singer, *et al.* (28, 38, 49, 50) have suggested a highly significant relationship between inhibition of movement and various aspects of psychologic functioning.

For each of the five variables enumerated above, we selected from the pool of 220 patients the fifty demonstrating the highest scores and the fifty demonstrating the lowest scores, *i.e.*, approximately the upper and lower quartiles. When distributing the groups in this manner for age and duration, they were found to be essentially equivalent in the three symptom categories. When the three symptom categories were separated into the high and low fifty, in all three cases they were found to be essentially equivalent in age, duration, educational and social background, as well as sex distribution. However, when any one of the symptom categories was distributed into a high and low group, the remaining two were found to be similarly distributed. Table 1 presents the ranges and average scores on the five categories for the high and low groups.

The several psychological variables under consideration were based upon clinical interviews, the Wechsler-Bellevue Intelligence Scale, the Rorschach, the Bender-Gestalt and Human Figure Drawings. These were selected as representing the most widely used clinical tests for the evaluation of personality and intellectual functioning. The test scores and ratings[4] derived from them were as follows.

TABLE 1

Ranges and Average Scores: Age, Duration, and Symptom Categories

Category	Low (N = 50)		High (N = 50)	
	Mean	Range	Mean	Range
Duration (years)	2.8	1–6	14.5	10–33
Age (years)	43	31–49	64	60–69
Symptom Categories				
Autonomic nervous system symptoms	9%	0–25%	55%	43–93%
Rigidity	.67	0–1.62	3.1	2.5–4.4
Voluntary movement impairment	19%	0–40%	72%	69–93%

1. *Wechsler-Bellevue Intelligence Scale.* The test was administered and scored according to standard procedures (53). Only the verbal score was taken into consideration for the purposes of this study since the parkinsonian motor symptoms could be expected to interfere with the performance aspect of intellectual functioning.

2. *Rorschach Test.* The test was administered and scored according to the standard procedures as outlined by Klopfer and others (24, 25). All of the formal protocol variables were scored. This included the number of responses, the movement and color responses, the various percentages, etc. Further, the M and FM responses were qualitatively evaluated as to the degree of activity or passivity inherent therein. This analysis was based primarily upon the methods described by Piotrowski (42).

3. *Bender-Gestalt.* Two ratings, both based upon Pascal (41), with adjustments appropriate for parkinsonians, were utilized:

a) Accuracy rating: For each of the nine designs on the test a rating of one, two or three was made, depending upon the accuracy of the individual production. The accuracy score was the total of the nine three-point ratings.

b) Configuration design: Scores were given each patient on the integration of the total Gestalt. Such deviations as overlapping of designs, inaccurate order, guide lines drawn, etc., were given error scores, and the patient's overall score represented the total number of errors in the pattern of designs.

[4] Inter-rater reliability coefficients were as follows: Accuracy—*rho* = .88; Sex differentiation—r = .94; Humanization—*rho* = .83; Activity level—r = .73; Mental impairment—r = .81; Clinical rating—r = .79.

4. *Human Figure Drawings.* The human figure drawings for each patient were rated in three different ways, according to the techniques and rationale of Machover and others (21, 35, 54, 55). The particular areas selected for ratings were considered significant in the overall personality evaluation of the individual, in accordance with the usual clinical modes of interpretation. The level of psycho-sexual maturity, human identification, and drive and energy level are considered basic components of intra- and interpsychic functioning and were respectively measured as follows:

a) Sex differentiation: This was scored on a six-point scale based upon the patient's accuracy in differentiating the sexual characteristics of the male and female in his drawings, and thus constituted an index of the degree of psychosexual maturity. Such factors as size, shape, and bodily parts were considered in the rating.

b) Humanization: In each case the figure drawing of the same sex as the patient was rated on a 15-point scale, according to the degree of human qualities present in the figure drawing. Such factors as bodily details, facial expression, shape, etc. were considered as indicants of the degree of identification with and feeling for other human beings.

c) Activity level: As an index of drive and energy level, each figure drawing of the same sex as the patient was rated on a five-point scale according to the implied or expressed degree of activity of each figure drawn and was based upon such factors as resistance to gravity, facial expression, elements of movement and activity, etc.

5. *Clinical Ratings.* For each patient two clinical ratings were made, based upon the entire clinical findings, including the test battery, history, and clinical impressions.

a) Mental impairment: This consisted of a four-point scale of cognitive impairment, ranging from none to mild, moderate, and severe. This included memory, orientation, abstractive capacity, attention and concentration.

b) Clinical rating: For each patient a predictive rating was made. Based upon a four-point scale, this reflected a clinical judgment as regards the adequacy of personality functioning and stress tolerance. This was intended as an overall index of the patient's capacity both to tolerate neurosurgical stress and to utilize the surgical gains.

In summary, this study was designed to investigate five factors considered significant in the psychological functioning of parkinsonian patients. From a pool of 220 consecutive patients tested we selected the 50 highest and 50 lowest for each of the five categories under consideration and then compared them on several psychological variables which were based upon test results and interviews.

RESULTS

In order to assess inter-relationships between the five categories under consideration in this research, Pearson product-moment coefficients of correlation were calculated. Each correlation is based upon 100 randomly selected cases, and the results are summarized in Table 2.

TABLE 2

Pearson Product-Moment Correlations: Five Basic Categories (N = 100)

	Duration	Age	A.N.S.	Rigidity	V.M.
Duration	x	−.10	.25†	.14	.29‡
Age		x	−.18	−.17	−.23*
Autonomic nervous system symptoms			x	.35‡	.42‡
Rigidity				x	.46‡
Voluntary movement impairment					x

* $p = .05$
† $p = .02$
‡ $p = .01$

TABLE 3

Five Basic Categories: Chi-Square and T Test Results

	W.B.	Rorschach				
	V.I.Q.	R	M	Active M	W%	Rej.
Duration	—	—	—	—	—	—
Age	—	—	—	—	$X^2 = 6.25$ $p = .02$	—
A.N.S.	$t = 1.93$ $p = .06$	—	$X^2 = 4.71$ $p = .05$	—	—	$X^2 = 5.14$ $p = .05$
Rigidity	$t = 2.80$ $p = .01$	—	$X^2 = 4.22$ $p = .05$	—	—	—
V.M.	$t = 2.96$ $p = .01$	$X^2 = 5.59$ $p = .02$	—	$X^2 = 5.06$ $p = .05$	$X^2 = 4.88$ $p = .05$	$X^2 = 7.11$ $p = .01$

	Figure Drawings		Bender-Gestalt		Ratings	
	Human.	Activ.	Acc.	Con. Des.	Clin. Rate	Ment. Imp.
Duration	—	—	—	—	—	—
Age	—	$X^2 = 4.56$ $p = .05$	$X^2 = 5.27$ $p = .02$	$X^2 = 4.61$ $p = .05$	$X^2 = 8.85$ $p = .01$	$X^2 = 4.35$ $p = .05$
A.N.S.	—	—	$X^2 = 4.10$ $p = .05$	—	—	—
Rigidity	—	—	$X^2 = 4.18$ $p = .05$	—	$X^2 = 4.68$ $p = .05$	$X^2 = 5.92$ $p = .02$
V.M.	$X^2 = 9.12$ $p = .01$	—	$X^2 = 11.02$ $p = .001$	—	$X^2 = 9.16$ $p = .01$	$X^2 = 10.34$ $p = .01$

Analysis of the table of intercorrelations reveals the age category to be negatively correlated to a small degree with voluntary movement impairment, and essentially unrelated to the other variables. Duration of illness demonstrates a slight positive correlation with two of the symptom variables. The three symptom factors, on the other hand, demonstrate moderate correlations with each other. Partial correlations taken between the three categories, demonstrate the relatively greater contribution of rigidity. When this symptom is partialed out, voluntary movement impairment and autonomic nervous system symptoms correlate .20 with each other.

For each psychological test and rating variable previously enumerated, *t* tests and chi-squares were computed to compare the high and low groups for each of the five categories. A tabulated summary of all the test and clinical variables which were found to differentiate the five categories at a level of statistical significance of .05 or better is presented in Table 3.[5]

The psychological variables which were found capable of distinguishing the high and low groups in each of the five basic categories can be delineated as follows.

Duration and Age. None of the test or rating variables significantly differentiated the long and short duration groups. Indeed, trends in the data suggest increased adaptation for the longer duration group, whose projective responses reflected a greater availability of ego resources. The lack of duration effects is surprising and constitutes one of the more unequivocal findings. Advanced age, on the other hand, demonstrates a relationship to cognitive and perceptual loss as well as to diminished stress ade-

[5] With exception of Verbal I.Q. for Autonomic Nervous System Symptoms. The following variables did not attain statistical significance: Sum C, FM, D, F+%, F% and A% on the Rorschach, and Size and Sex Differentiation on the Human Figure Drawings.

quacy. The projective responses of the older group suggests a personality shift in the direction of lowered aspiration level and diminished drive and energy. Thus the older group tends to limit its psychological scope in order to accommodate possibly increased organic deficits. Such deficits could, perhaps, normally be anticipated with increasing age quite independently of Parkinson's Disease.

Symptoms. Impairment in the functioning of the autonomic nervous system seems related to decreased intellectual productivity, to perceptual inadequacy and to the impoverishment of emotional resources. Furthermore, trends are present in the direction of diminished effectiveness of coping mechanisms. Like autonomic nervous system impairment, increased rigidity is related to intellectual and perceptual loss and to emotional impoverishment. In addition, the high group demonstrates losses in stress-adequacy and cognitive functioning. Impairment in voluntary movement is the most reliably discriminating of the three symptom categories. In addition to losses in cognitive, intellectual and perceptual functions, the highly impaired group demonstrates the most pervasive personality inadequacy and emotional regression. Most outstanding and unique to voluntary movement impairment is the loss of drive and available energy level as indicated by severely restricted responsivity to outer stimuli.

In summary, the three somatic categories demonstrated consistent decrement of verbal intelligence, cognitive and perceptual functioning, and evidenced the widest psychological effects. The overall tendency for the symptom categories was toward increased avoidance, repression, dehumanization and diminished energy and drive level. Of the three symptom categories, loss of voluntary movements demonstrated the most reliably pervasive psychological effects. The age factor was most clearly related to probable organic deficits and both reduced drive and stress-adequacy. Duration demonstrated no losses and, in fact, evidenced an adaptive trend.

DISCUSSION

The two factors which have been associated with psychological changes in parkinsonism, age and duration of illness, were notably non-discriminating of personality effects. Indeed, comparison of the duration groups indicates a greater maladaptive tendency for the shorter duration group. It would thus appear not unreasonable to suggest, contrary to a previous report (36), that the initial onslaught of the illness has the most serious psychological consequences, whereas the experience of living with it might have adaptive effects. This hypothesis is necessarily based upon the conditions of our study, *i.e.* that all other disease variables are essentially equated. With regard to age, it is primarily the cognitive, perceptual and adjustmental facets of behavior which demonstrate alterations. These effects are commonly anticipated with advancing years (1), and the psychological condition of our older group (mean age = 64 years) may represent the normal adjustments to the subtle organic changes incident to aging.

In contradistinction to the lack of gross psychological change associated with age and duration of illness, each of the three somatic indices differentiate the high and low groups in both intellectual and personality factors. The similarity of findings between the high rigidity and high autonomic involvement groups should be noted. In both instances intellectual and perceptual loss, as well as impoverishment of emotional and ego resources are present. These deficits are all representative of the higher levels of mental functioning. Thus, symptom severity in Parkinson's Disease seems related to the alteration of the higher level mental functions that have been customarily attributed to cortical activity. The data suggest that the extrapyramidal system (the substrate of rigidity), the autonomic nervous system, and cortical functioning are mutually inter-

related in severe parkinsonian symptomatology.

Of the three symptom categories, the significant and pervasive changes related to voluntary movement impairment suggest its centrally influential role in the total psychological functioning of the parkinsonian. Factors in addition to those involved in the other two symptoms are probably operating. Previous studies have established the direct relationship between experimental motor inhibition, and constructive mental activity, (28, 38, 49, 50). This relationship, however, did not obtain in a study of parkinsonians (15). Instead, they evidenced a singular inability to substitute ideational resources for motor activity. This lack of inner resourcefulness can, in part, be understood by considering the life situation of the severely incapacitated parkinsonian patient. He is bedridden or homebound for the most part, markedly limited in opportunity for interpersonal relationships and largely isolated from sensory stimulation. Moreover, he lacks the sensory kinesthetic feedback derived from movement itself. In certain respects his condition thus resembles that of the experimental subjects exposed to isolation and sensory deprivation (20, 31, 51). Those studies demonstrated the adverse intellectual and personality changes incident to socio-psychological isolation and sensory deprivation. Delusions and hallucinations were not rare when such experimental conditions were prolonged.

In a recent attempt to account for psychological aberrations consequent to the isolation stress following cataract surgery, the possible dysfunction of the ascending reticular system was suggested as an explanatory mechanism (53). Moreover, previous studies by Lindsley and others (32, 33, 44) have asserted that the intactness of this system is indeed crucial in providing a necessary background for various aspects of behavior. Attention, consciousness, perception and even motivation might depend upon the activation provided by it.

To the extent that incapacitation consequent to basal ganglia damage imposes increased isolation and sensory deprivation, the reticular activating system firing is lowered by insufficient input. Thus, the activation levels required for higher intellectual and personality functions are diminished and mental impoverishment may ensue. This process, in turn, may further restrict and discourage motor activity and an increasingly deactivating cycle could thus be created and perpetuated.

SUMMARY

In summary, from a pool of 220 consecutive parkinsonian patients the 50 highest and the 50 lowest in age, duration of illness, autonomic nervous system impairment, muscular rigidity, and voluntary movement impairment were compared on a number of psychological functions. Duration of illness failed to differentiate the high and low groups on any pertinent test variable, while age was related to deficits normally incident to the aging process. The symptom categories, on the other hand, demonstrated consistent intellectual, cognitive, and perceptual losses, and evidenced significantly diminished personality resources. Voluntary movement impairment, the most direct measure of overall parkinsonian incapacitation, was related to the most reliably pervasive psychological effects. An explanatory hypothesis was suggested.

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We believe that one of the functions of a scientific journal should be to present critical reviews of the current status of the professional areas it serves. Reviews of this kind most often have to do with theoretical and other areas which are quite remote from the day-to-day interests of the practicing clinician. The article by Dr. Gurdjian and his associates is offered as a carefully prepared summary of the estimates and judgments of experienced clinicians and investigators (neurosurgery), and deals with the present status of methods used in the diagnosis of patients with cerebrovascular disease.

The Editors.

NEUROSURGICAL DIAGNOSTIC EVALUATION OF THE PATIENT WITH CEREBROVASCULAR DISEASE (STROKE SYNDROME)

E. S. GURDJIAN, M.D.,[1] W. G. HARDY, M.D., D. W. LINDNER, M.D. AND J. E. WEBSTER, M.D.

As experience is gained in the management of patients with cerebrovascular disease, the importance of accurate and complete diagnosis becomes more and more apparent. The number of persons every year who present themselves with, and succumb to, conditions resulting from disease of the cerebral vasculature is steadily increasing. For this reason we feel that periodic evaluation of the methods of diagnosis and results of treatment is essential to a better understanding of the problems we face in patients with cerebrovascular disease. It is the purpose of this paper to review and discuss the diagnostic methods currently used in the management of the "stroke" patient.

Patients with cerebrovascular disease present varying clinical manifestations. Frequently their complaints are of vague attacks of dizziness, vertigo, diplopia, syncope, headache, dysphasia, paresthesia, or progressive mental or emotional deterioration. On the other hand, a history may elicit a sudden or progressive onset of weakness or paralysis of one side of the body with or without associated loss of consciousness. In some instances episodic appearance of some or all of the above symptoms and signs may occur with little or no evidence of neurological deficit remaining in the intervals between attacks. In general, these various clinical pictures may be grouped under three headings: 1) the apoplectic form with sudden onset of hemiplegia or hemiparesis with or without unconsciousness; 2) the episodic or recurrent form with transient attacks of the various neurological symptoms and signs over a period of many months or years and often progressing to, or terminating in, hemiplegia; 3) the slowly progressing form of cerebrovascular disease with signs and symptoms suggesting a mass lesion or mental deterioration. It is obvious that such varying symptoms and signs may also be seen in pathological conditions other than cerebrovascular disease. Among these are neoplastic involvement of the nervous system, traumatic lesions of the brain, and certain inflammatory and degenerative diseases involving the nervous system as well as certain vascular malformations and abnormalities which may rupture and bleed. Because certain of these conditions require specific surgical and/or medical methods of management, it is important to know the exact diagnosis for the early institution of proper management.

A careful history and physical examina-

[1] Department of Neurosurgery, Wayne State University College of Medicine, Neurosurgical Services Grace and Detroit Memorial Hospitals, Detroit, Michigan. This study was supported in part by the Kresge Foundation.

tion may strongly suggest certain possibilities in the differential diagnosis. Certain laboratory analyses including blood count, urinalysis, sedimentation rate, blood urea nitrogen, etc., may suggest hypertensive disease, blood dyscrasias, cardiorenal abnormalities, or valvular disease with repeated embolic phenomena. Plain x-rays of the skull and chest, the electroencephalogram, the electrocardiogram and lumbar puncture may give important additional information to better categorize the patient's disease state. In this paper we will attempt to summarize the present information pertaining to the value of carotid compression, ophthalmodynamometry, electroencephalography, lumbar puncture, angiography, and ventriculoencephalography with respect to these patients.

CAROTID COMPRESSION TESTS

Although it has been known for about 150 years that manual occlusion of one or the other carotid artery may indicate the presence of cerebrovascular insufficiency, it is only recently that its use has become popular. In the late '20's and early '30's attention was drawn to the possibility of carotid sinus irritability on manual stimulation or irritation of the carotid bifurcation in the neck. Until more recently, however, a critical evaluation of the various forms of carotid sinus irritability had not been made. The three types of carotid sinus irritability which have been recorded in most textbooks include: 1) the cardio-inhibitory type associated with cardiac asystole and syncope; 2) the vaso-depressor type associated with severe drops in blood pressure with or without syncope; 3) syncope due to compression or palpation of the carotid sinus region unassociated with bradycardia or vaso-depression. This last form has been incorrectly termed the cerebral form of carotid sinus irritability. In a recent paper on this subject (4), it was shown that the so-called cerebral form of carotid sinus irritability usually represented an ischemic response.

Manual occlusion of one or the other carotid arteries in the neck may in some instances produce dizziness, focal abnormalities in the opposite half of the body including convulsive twitches, and finally syncope. These effects frequently are due to cerebrovascular insufficiency on the side opposite the compression. In some cases this ischemic response may also be associated with carotid sinus irritability with bradycardia or a drop in blood pressure. When syncope occurs upon compression of the carotid artery without bradycardia or a drop in blood pressure, however, occlusive vascular disease involving the opposite carotid, the anterior cerebral, or the vertebral basilar system usualy exists. In some cases these occlusive lesions may be located low in the neck in regions not ordinarily demonstrated by routine cerebral angiography. When compression of either carotid bifurcation results in syncope unassociated with bradycardia or a drop in blood pressure, a partial or complete occlusion of the vertebral basilar system usually exists.

The findings in 100 patients with hemiparesis or hemiplegia responding by syncope on carotid compression are shown in Table 1 (from 4). Only 12 among the 100 cases had pure cardio-inhibitory responses with marked bradycardia or asystole and with normal appearing angiograms. In 63 of these patients there was angiographic evidence of partial or complete occlusion of the contralateral internal carotid artery in the neck, non-functioning proximal portions of the anterior cerebral artery on the opposite side, or vertebral basilar occlusive disease. In an additional group of 13 patients there was a combination of cardio-inhibitory and ischemic responses. In the same paper, results of carotid compression in 154 patients whose complaints were due to causes other than cerebrovascular disease were given. Compression of the carotid

TABLE 1

Syncopal Responses upon Carotid Compression in 100 Patients with Cerebrovascular Disease

Type		N
Cardioinhibitory response	Without hemiplegia	
	unilateral asystole—6	
	bilateral asystole —2	8
	With hemiplegia	
	ipsilateral asystole	4
		12*
Ischemic response (occlusive vascular disease)	Complete carotid artery occlusion	11
	Partial carotid artery occlusion	17
	Anterior cerebral artery occlusion	18
	Basilar artery occlusion	
	suspected —13	
	confirmed at autopsy— 2	15
	Middle cerebral artery occlusion	2
		63
Combined cardioinhibitory and ischemic responses	Complete carotid artery occlusion	
	contralateral asystole—3	
	ipsilateral asystole —1	4
	Partial carotid artery occlusion	
	ipsilateral asystole —1	
	contralateral asystole—2	
	bilateral asystole —1	4
	Anterior cerebral artery occlusion	
	bilateral asystole	4
	Middle cerebral trunk occlusion	
	contralateral asystole	1
		13
Miscellaneous (including vasodepressor response)	Cerebrovascular insufficiency	
	normal angiogram	
	no focal signs —5	
	with focal signs—2	7
	Cerebrovascular insufficiency	
	with vasodepressor response	2
	Intracerebral hematoma	1
	Brain tumor	2
		12

* Except for 1 patient with an aneurysm, all 12 have normal angiograms.

on one side and then the other was carried out in each of these patients. In those less than 40 years old there were no abnormal responses in 52 instances. Between the ages of 41 and 50, a group which included 55 patients, there were three examples of abnormal response (one patient had syncope upon right or left carotid compression, the second had vertigo from compression of either the right or left carotid, and the third patient had a feeling of numbness involving the left half of the body upon compression of the right carotid artery). Between the ages of 51 and 60 there were 27 patients, with syncopal responses in two. Between the ages of 61 and 80 there were 20 patients, five of whom had syncopal responses upon compression. Severe bradycardia or asystole occurred in only two patients in this entire group of 154.

The accuracy which may be expected from this test may be seen by a study of

TABLE 2

Response of Patients with Hemiplegia to Digital Carotid Artery Compression

Hemiplegia: Syncopal Responses	
Carotid artery occlusion, complete	31 cases
Syncope	26 cases
No syncope	5 cases (2 long standing)
Carotid artery occlusion, partial	21 cases
Syncope	18 cases
No syncope	3 cases (1 long standing)
Anterior cerebral artery occlusion	15 cases
Syncope	13 cases
No syncope	2 cases
Basilar artery occlusion	10 cases
Syncope	9 cases
No syncope	1 case
Hemiplegia: No Syncopal Responses	
Brain tumor, degenerative inflammatory disease, emboli, or trauma	66 cases
Syncope	11 cases (1 carotid sinus reflex; 2 papilledema; 1 chronic subdural)
No syncope	55 cases
Middle cerebral artery occlusion	16 cases
Syncope	6 cases (1 carotid sinus reflex; 1 partial carotid occlusion; 1 anterior cerebral occlusion)
No syncope	10 cases
Small artery occlusion (arteriosclerosis)	33 cases
Syncope	5 cases (3 carotid sinus reflex)
No syncope	28 cases

Table 2 (from 8). Partial or complete occlusion of one or the other internal carotid artery may be correctly indicated in a fairly large percentage of cases by manual occlusion of the opposite carotid in the neck. The test also appears to be positive in a large number of patients with occlusion or stenosis of the proximal portion of the anterior cerebral artery on one or the other side. Middle cerebral artery occlusion or occlusion of the smaller branches of the middle cerebral or capsular ramifications are frequently unassociated with a syncopal response on carotid compression.

Carotid compression tests have become a part of the routine neurological examinations on our patients, particularly those past the age of 40. As is true with all tests, however, exceptions do occur. It is extremely important not to mistake a brain tumor for a carotid thrombosis, or vice versa, based upon the carotid compression test alone. The possibility that a mass lesion and occlusive cerebrovascular disease may co-exist should always be kept in mind. In other words, a syncopal response to carotid compression in a patient with focal neurological signs and symptoms does not obviate the need for cerebral angiography, but rather increases the importance of good angiographic studies. Furthermore, a positive response to carotid compression need not necessarily indicate a symptomatic pathological state since patients who have had one or the other carotid artery ligated for aneurysm or AV malformation may respond to compression with syncope. Thus, an insufficiency can be established and be demonstrable only by the compression test, the patient remaining otherwise asymptomatic.

OPHTHALMODYNAMOMETRY

Since the introduction of ophthalmodynamometry in 1917 by P. Bailliart (1), several authors have discussed this technique and its value in certain occlusive cerebrovascular diseases. Acute obstruction

of the carotid artery in the neck by digital compression causes an unmistakable drop in the retinal artery pressure obtained by the ophthalmodynamometer. Conversely, in the presence of a significant difference in the levels of pressure on the two sides, the conclusion may be drawn that on the side of the lower retinal pressure there may be partial or complete obstruction of the internal carotid artery or the carotid bifurcation in the neck.

Thomas and Petrohelos (7) reviewed the literature and found, in 249 control cases, that the diastolic pressure varied from 0 to 14 grams, and the systolic from 0 to 9 grams. The average difference for diastolic pressures was 5.2 per cent and for the systolic 3.3 per cent. In their review of 19 cases of carotid artery occlusion, 11 from the literature and eight from their own cases, they found that four had no significantly lower pressure on the side of the occlusion (one of their own cases, three of 11 cases from the literature). Among those patients with occlusion of one or the other carotid artery the average difference between the two sides for the diastolic pressure was 31.7 per cent, while for the systolic pressure it was 24.1 per cent.

There are various possible reasons for finding no significant differences in pressure on the two sides in the presence of occlusive disease involving one or the other carotid artery. First, a good collateral circulation may exist through the circle of Willis or between the external and internal carotid systems. Second, a possible anatomical variation in the vasculature on the one side compared with the other, such as unequal brachial blood pressure and radial pulsations resulting in improper reflection of the occlusive disease in the neck upon the retinal artery pressure, may exist. Svien and Hollenhorst (6) stated that if the diastolic pressure in both eyes is less than 20 grams, the results of any differences in pressure readings on the two sides may not be reliable. Heyman, Karp and Bloor (5) noted that the readings of both the systolic and diastolic pressures may be significant, and in some of their patients with carotid artery circulation impairment there was a decrease in the systolic readings only. They state that the retinal artery pressures cannot be relied upon to distinguish partial from complete occlusions. In an already lowered pressure on one side, if homolateral compression of the carotid artery causes further drop in the retinal pressure, than a partial occlusion in the neck may be suspected, according to these authors. Several authors have emphasized that repeated readings may give variable results within the limits of normal variations seen among control cases.

In a recent paper (2), we described 16 patients with thrombosis of the internal carotid artery in the neck. In this group two patients had partial occlusion of one carotid artery (Figure 1), two other patients had partial occlusion in one carotid and complete occlusion in the opposite carotid, and one patient had a thrombosis of the entire carotid bifurcation. In our hands, ophthalmodynamometry was ineffective in about 30 per cent of these cases. We feel that this is in accord with the physiological principles involved in the blood supply to the brain in the presence of an occlusion or ligation of one internal carotid artery in the neck. A great deal depends upon the connections between the vessels on the two sides through the circle of Willis as well as the connections between the external carotid and the internal carotid circulations. In some instances, the basilar with its posterior communicating branches may be fully adequate to take care of the blood supply in which case the external carotid connections with the internal carotid may not be called upon to help supply the ischemic brain. Anatomical variations in the circle of Willis, *i.e.*, congenitally small communicating vessels or primary branches, become very important in these situations. In other cases, communications between the

FIG. 1. Partial occlusion of right carotid artery. Retinal pressures were 120/40 on the left side, and 60/20 on the right side. The partial occlusion of the right carotid bifurcation is reflected in the ophthalmodynamometric reading.

FIG. 2. Good communication between external carotid and internal carotid circulation through the ophthalmic artery (upper arrows). Lower arrows show complete occlusion of the left internal carotid artery. The ophthalmo-dynamometric studies showed pressure of 90/35 on the right, 90/42 on the left side. Retinal pressure studies do not help in the diagnosis of left internal carotid artery thrombosis.

external and internal carotid systems may be more effective as a collateral pathway. If so, it is quite likely that the retinal pressure may not reflect accurately the presence of a carotid artery lesion in the neck (Figure 2).

Another important difficulty with ophthalmodynamometric studies is the evaluation of cases in which there may be occlusive disease with complete occlusion on one side and partial occlusion on the other side (Figures 3, 4). In our work, these bilateral lesions have not been reflected in the retinal pressure studies. Certainly, we are unable to guess their presence from our retinal pressure records except in those instances where the occlusive disease, although partial, involved only the one side. How accurate ophthalmodynamometry may be in unilateral partial occlusions, future work and experience may clarify.

It is our impression that retinal pressure studies may accurately reflect the presence of occlusion on one or the other side in the acute case, but in cases in which collateral circulation may be established rapidly through the ophthalmic communication between the external and internal carotid circulation, the retinal pressures may equalize. On the other hand, when the supply of the ischemic brain is through the basilar distribution and the posterior communicating vessels, the retinal pressure studies may continue to show a differential, reflecting the fact that one carotid artery has been shut off. In the presence of bilateral occlusive disease, with the information on hand up to the present time, ophthalmodyna-

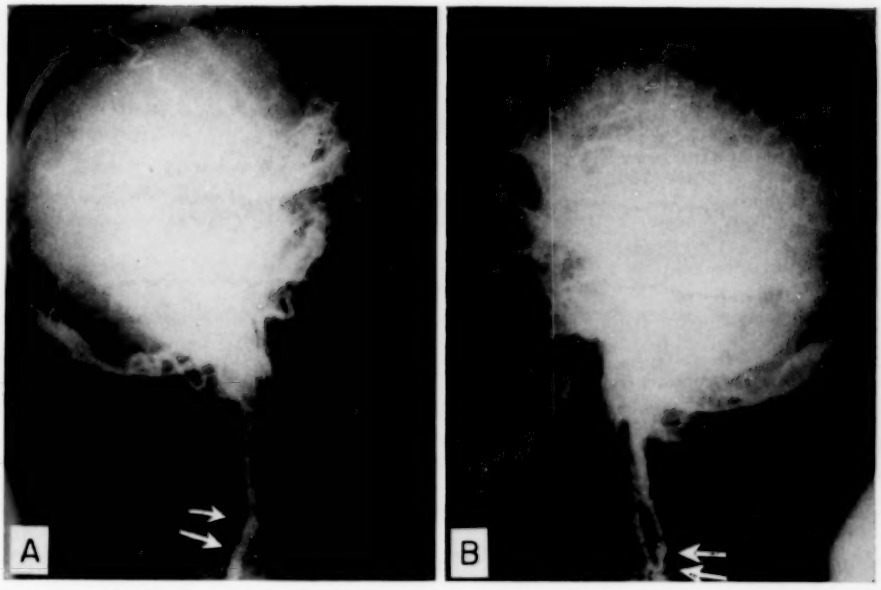

FIG. 3. Complete occlusion left internal carotid artery. Partial occlusion right carotid bifurcation. Retinal pressure studies were 100/45 right side, 55/40 left side. Partial occlusion is not reflected in the retinal pressure.

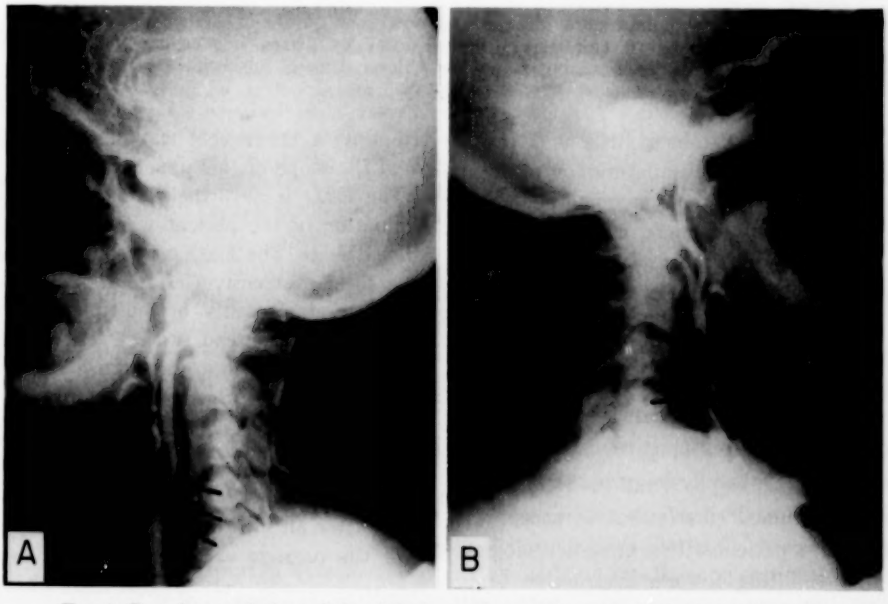

FIG. 4. Complete occlusion of the right internal carotid artery. Partial occlusion of the left bifurcation with retinal pressures of 130/50 right, 180/60 left side. The partial occlusion is not recognizable from retinal artery pressure studies.

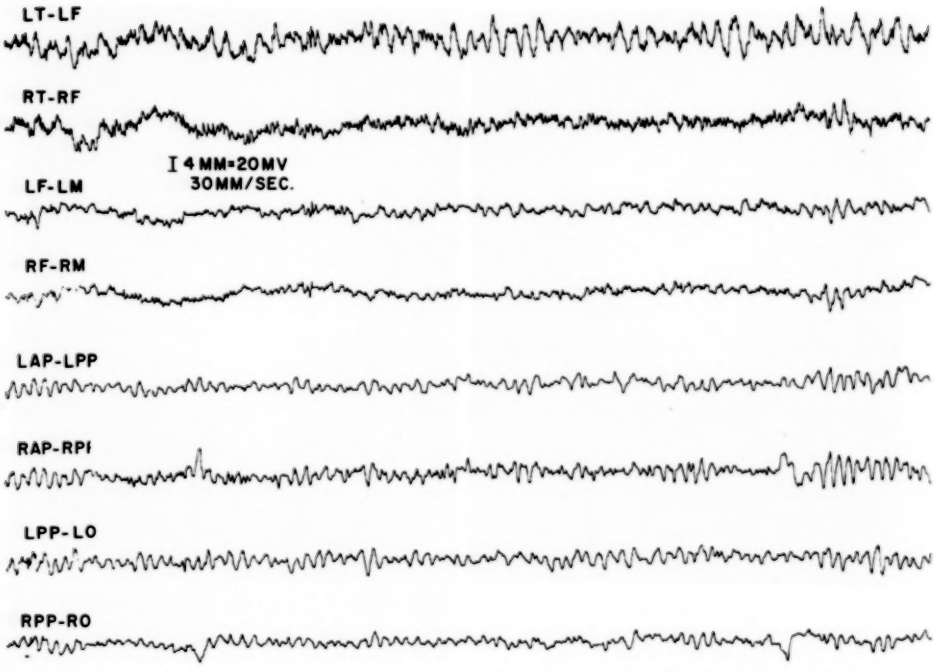

FIG. 5. Focal rhythmical slowing in a male patient. Intermittent blurred vision for two months. Day prior to recording sudden onset of aphasia and confusion. No paralysis. Angiography showed complete occlusion of the left internal carotid artery. EEG the day after onset shows fairly continuous rhythmical 5–7 c/per second slowing in the left mid-temporal area. This type of record indicates a subcortical focal disturbance. It is commonly seen in subcortical vascular occlusions, but may occur with any type of subcortical focal lesion including neoplasms, atrophic scars or hemorrhages.

mometry appears to be of little help. In the presence of partial, unilateral or multiple occlusions, ophthalmodynamometry cannot be expected to diagnose conditions accurately, certainly not as accurately as angiography.

ELECTROENCEPHALOGRAPHIC EVALUATIONS

The EEG in cerebrovascular disease is frequently normal or shows only minimal nonspecific changes (Figures 5, 6, 7, 8). It is difficult for the physician not experienced in EEG-clinical correlations to accept the fact that a patient with a gross neurological deficit resulting from a destructive brain lesion can have a normal EEG. This phenomenon is poorly understood and an attempt at a theoretical explanation is beyond the scope of this paper.

The EEG is nevertheless very useful in evaluation of the patient with cerebrovascular disease. The EEG may show evidence of a focal destructive lesion. It may show a diffuse abnormality or multiple foci indicating a widespread process. There is no specific EEG pattern for diffuse cerebrovascular disease but generalized mixed fast-slow dysrhythmias with or without focal or lateralizing components are quite common. Focal EEG abnormalities present immediately after an infarction tend to disappear with the passage of time. However, delta foci occasionally persist with little change for months and even years. A progressive focal abnormality elicited by serial elec-

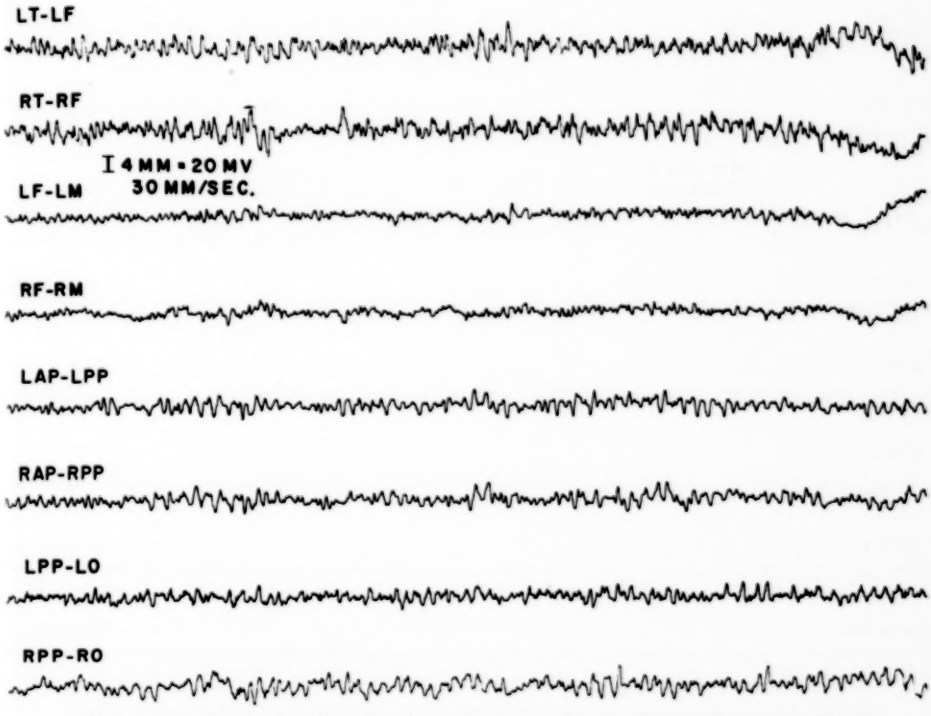

FIG. 6. Generalized mixed fast-slow dysrhythmia in a 57 year old female patient. Known hypertension for several years. Five days prior to this record developed intermittent numbness and weakness. This was accompanied by intermittent aphasia. Angiography showed occlusion of the left internal carotid artery. The EEG recording shows a pattern that is commonly seen in diffuse cerebrovascular disease but which is not necessarily diagnostic. The record shows a generalized mixed fast-slow dysrhythmia with marked variation in frequencies in both fast and slow ranges. Despite clinical evidences of a focal lesion, the EEG has no definite localizing features. This is commonly the case in cerebrovascular disease.

troencephalography suggests the presence of a tumor.

In general, an EEG showing a well-defined delta focus should be interpreted only as indicating a destructive lesion. The electroencephalographer is rarely justified in stating whether such a destructive lesion is vascular or neoplastic on the basis of the EEG record alone. Corroborative evidence by other diagnostic tests and clinical information is generally necessary to establish the true diagnosis.

The EEG obtained during carotid compression has not been effective in establishing the adequacy or inadequacy of the cerebrovascular supply preliminary to ligation of the carotid artery. Several authors have emphasized this point. EEG abnormalities may occur in patients who can tolerate a carotid ligation and in other instances, a normal EEG pattern with compression of the carotid does not rule out the possibility of complications after ligation of the carotid.

When an ischemic effect is obtained as a result of compression of one carotid artery, there is slowing of the record, particularly in the frontal and parietal leads and more so on the side of the compression than on the other. This slowing becomes quite marked as the patient develops a syncopal effect. In patients who can tolerate carotid

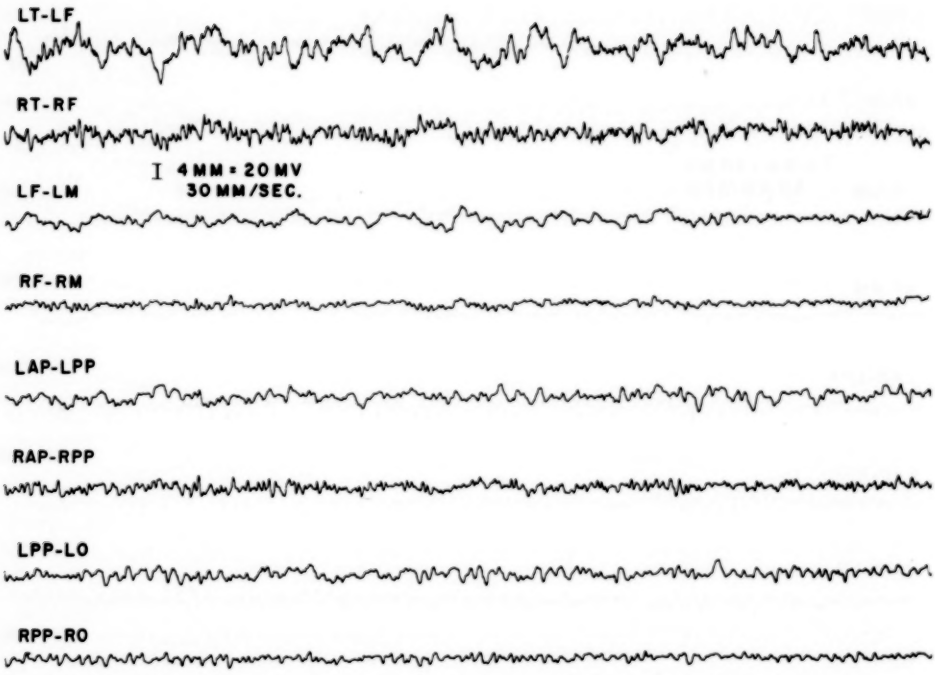

FIG. 7. Arrhythmical (random slow wave) focus in a 69 year old male patient. Slowly progressive right hemiplegia over a period of three weeks. Angiogram showed complete left internal carotid artery occlusion. The EEG showed marked arrhythmical (random) slowing in the left temporal area with some frontal and parietal spread. This EEG pattern indicates the presence of a destructive lesion, primarily cortical, in the area indicated. An identical EEG picture may occur with cerebral neoplasms.

compression, the electroencephalographic records remain quite normal in most instances.

ANGIOGRAPHY

Angiography has certainly proven to be the most valuable method of study in patients with cerebrovascular disease. As is true with all diagnostic technics, however, there are disadvantages as well as advantages. The obvious advantages are: 1) good visualization of partially or completely occluded vessels of moderate or large size; 2) exact localization of the lesion; 3) the relative ease and safety with which the method may be used; 4) the rather frequent demonstration of unsuspected mass lesions; 5) the postoperative demonstration of patency or occlusion in those instances when intimectomy has been performed. Most of the disadvantages to angiography are related to its morbidity and mortality. In a series of 300 consecutive patients diagnosed as having had a "stroke," death was ascribed directly to the angiographic procedure in two patients. The incidence of morbidity from the procedure was less than 2 per cent, none of the complications being permanent. In some cases the use of general anesthesia makes the technique somewhat more dangerous than when the angiogram can be performed under local anesthesia.

One of the most important disadvantages of angiography, other than its morbidity or mortality, lies in the fact that angiography only visualizes the larger vessels. When secondary and tertiary branches of the main trunks are involved, no convincing

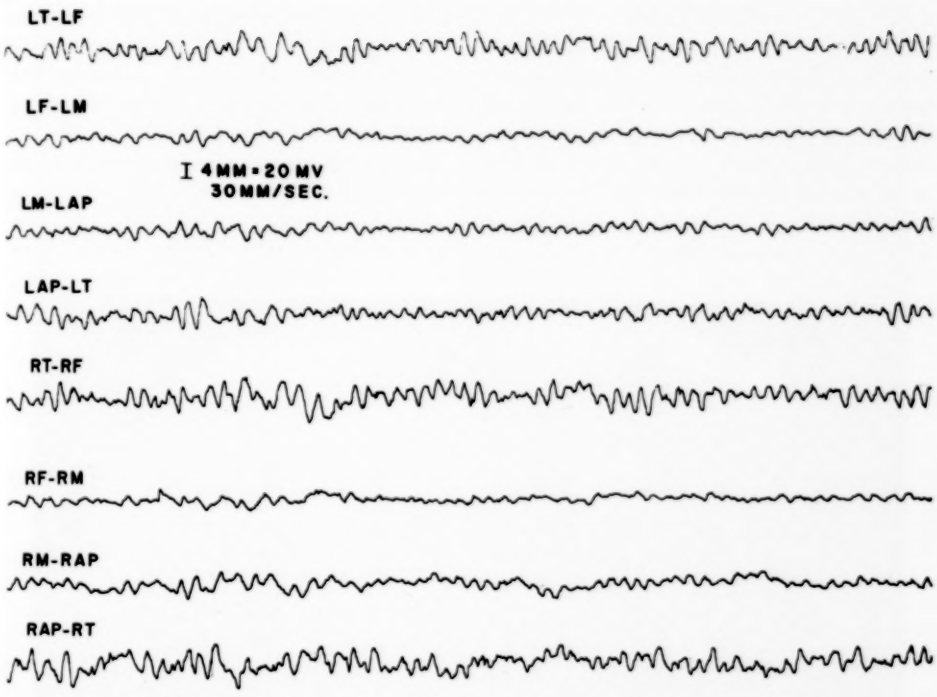

FIG. 8. Diffuse rhythmical slowing greatest in the temporal-frontal regions in a 52 year old hypertensive male patient. Six months prior to admission had episode of diplopia which cleared in two weeks. Two weeks prior to admission collapsed at work, regained consciousness, but had a residual ataxia and dysarthria. Had periodic dizziness and blurring of vision. Carotid angiograms essentially negative. Vertebral angiogram showed marked irregularities of the basilar artery and complete occlusion of the distal portion of the right vertebral. The EEG pattern is one which is fairly commonly seen in *basilar artery disease* but which again is not diagnostic. It shows diffuse, fairly continuous, rhythmical slowing, greatest in the temporal and frontal areas. These changes are probably due to disturbances of pace-maker mechanisms in the upper midbrain and may occur with a variety of central nervous system diseases which affect this region.

record of this involvement is seen in the angiographic pattern. Smaller branches of the basilar vertebral system may cause devastating neurological deficits, but the angiogram does not show the exact area of involvement. Small atheromatous changes in these vessels and in the branches of the anterior, middle and posterior cerebral arteries may not be adequately seen although the symptoms and signs may be severe. Furthermore, what may be an extremely dangerous atheromatous lesion, because of its proximity to an outgoing branch, may be completely overlooked, while an atheroma of a larger size in a different position may be visualized and ascribed causative importance.

Probably the most important contribution of angiography in the past few years has been the demonstration of extracranial causes of the "stroke" syndrome. The presence of complete or partial occlusive lesions of the carotid artery bifurcation in the neck, involvement of the vertebral vessel as the artery branches off the subclavian, and involvement of the branches of the innominate artery or the aorta are the result of angiography in the present day manage-

ment of the "stroke" syndrome. The value of angiography becomes even more significant in instances where the lesion is surgically amenable since, in these instances, the lesion is more likely to be an extracranial involvement of the larger vessels supplying the brain. Therefore, the proper angiographic evaluation of the patient with a "stroke" syndrome depends upon the visualization of the vessels in the neck, the carotid bifurcation, the vertebral subclavian junction, and, in rare instances, the visualization of the aorta and its branching vessels toward the head.

In our experience, angiography has demonstrated occlusive involvement of one or more of the major vessels supplying the brain in slightly over half of the total num-

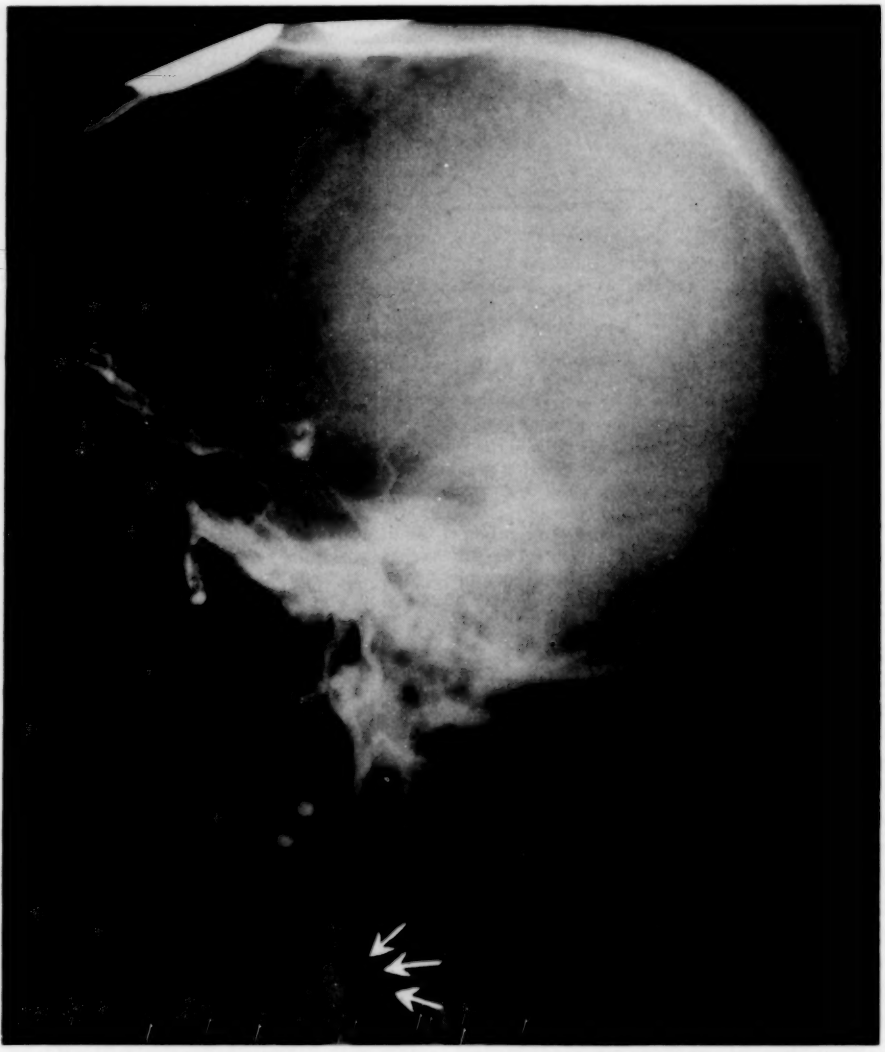

FIG. 9. Thrombosis of left internal carotid artery with visualization of syphon through collaterals from the external carotid artery circulation.

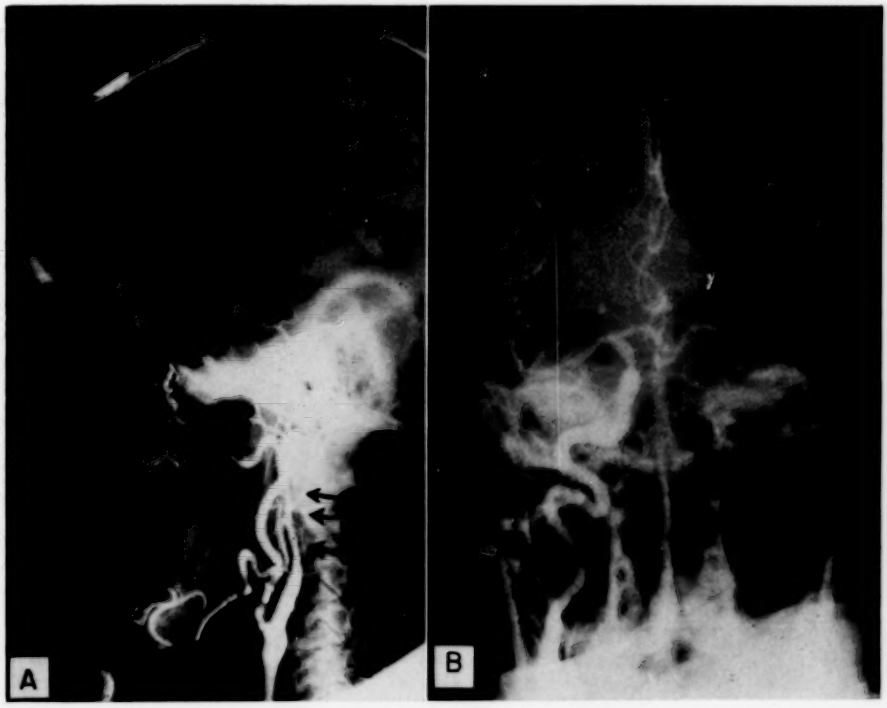

FIG. 10. Internal carotid artery thrombosis on the left (arrows). On right carotid angiography, left anterior and middle cerebral vessels also are visualized.

ber of cases with cerebrovascular disease. About one-quarter of the total number have occlusive lesions of vessels in the neck. These are about equally divided between partial and complete occlusions (Figures 1, 9, 10). The anterior cerebral artery is involved in its proximal portion in about 8 per cent (Figure 11). Vertebral basilar involvement is demonstrated in less than 5 per cent (Figures 12, 13). The middle cerebral artery is occluded in about 5 per cent (Figure 14).

It should be emphasized that in about one-tenth of cerebrovascular disease suspects, a mass lesion may be demonstrated as a result of angiographic studies. Brain tumor, subdural hematoma, intracerebral hematoma, and brain abscess are all seen in this group.

It should be pointed out that although the angiogram may show an abnormality in one of the major vessels supplying the brain, there may coexist within the brain other pathologic states which may be surmised from the clinical examination of the patient. Thus, a thrombosis of the internal carotid artery in the neck may be asymptomatic if the patient does not have any difficulty in developing a collateral circulation to take care of the blood supply of the brain on the affected side. If, on the other hand, the collateral circulation is not adequate, ischemic involvement, infarction, and severe disability as a result of such changes may accompany the presence of a thrombosis of this larger vessel.

In the recent contributions of DeBakey and his associates (3), the importance of looking for atheromatous lesions farther and farther away from the head has been pointed out. Obstructive lesions at the origin of the common carotid artery from the

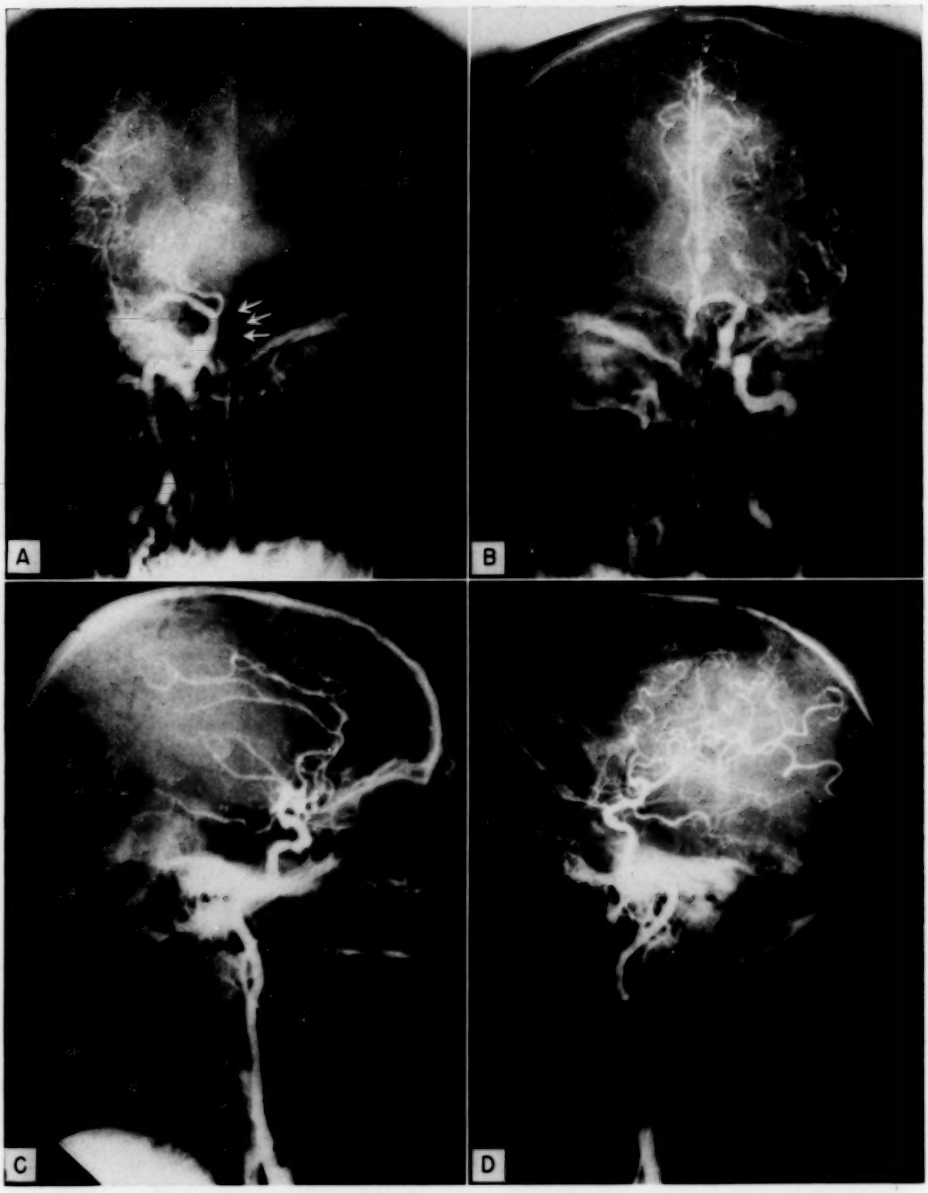

FIG. 11. Occlusion or stenosis of proximal portion of right anterior cerebral artery (a). Note filling of both anterior cerebral arteries when the left carotid is injected (b). This patient also has generalized atherosclerosis of both carotids (c, d).

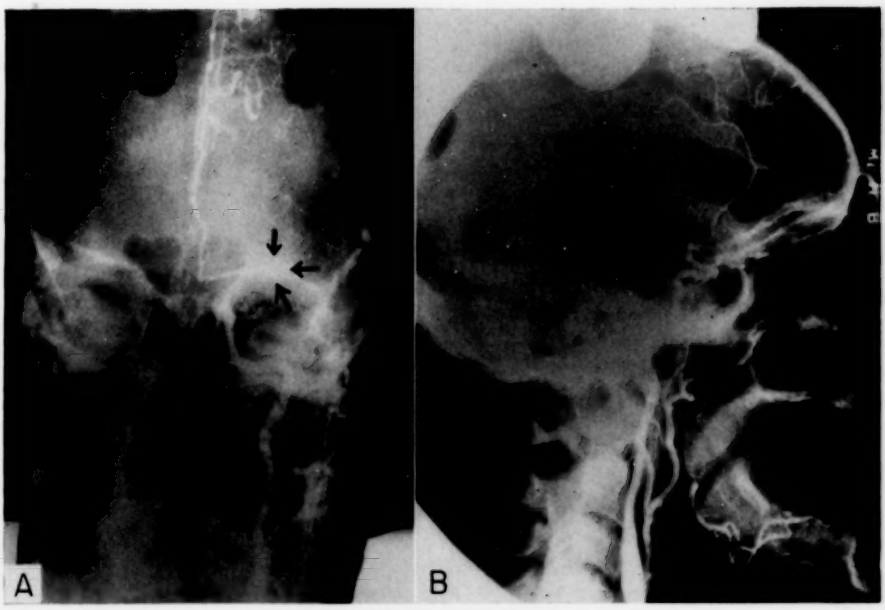

FIG. 12. Trunk occlusion of the middle cerebral artery (a, b).

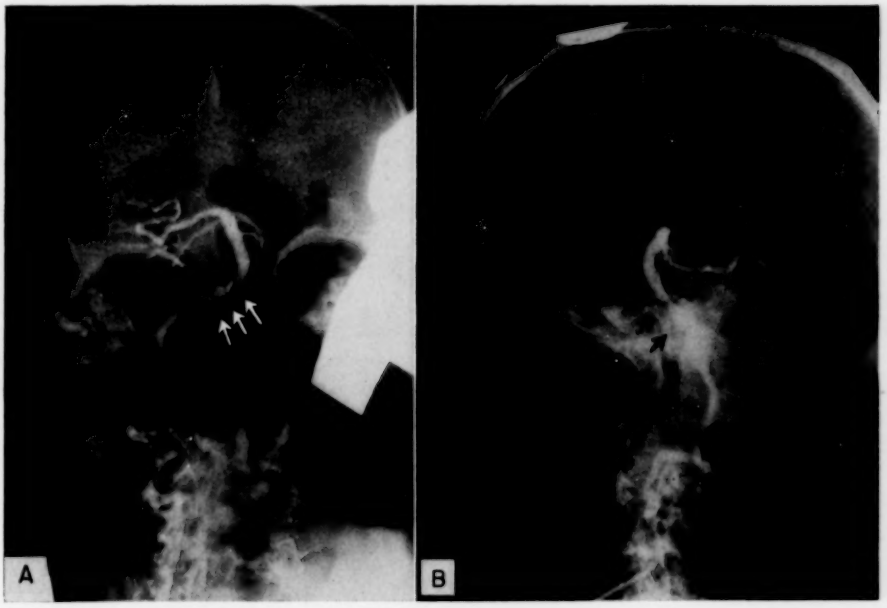

FIG. 13. Partial occlusion of the basilar artery and some posterior bending with erection of the upper end of the basilar (b) and complete occlusion of the distal portion of right vertebral artery.

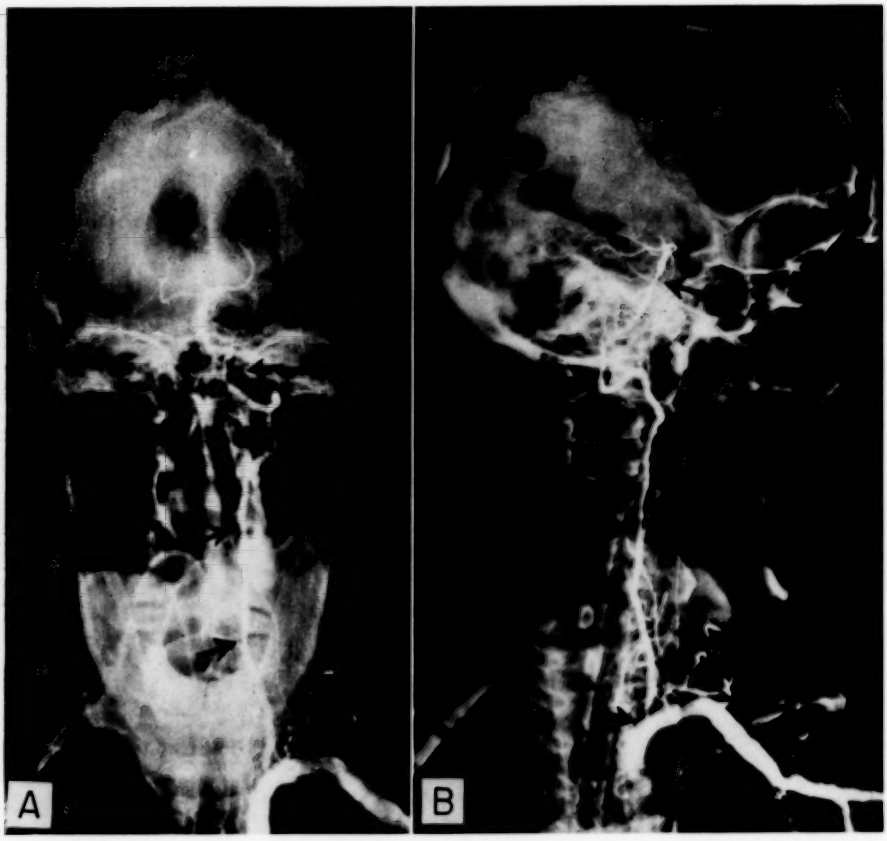

FIG. 14. Generalized atherosclerosis of the vertebral basilar complex in a patient with signs of severe cerebellar disease. Arrows point to the areas of vascular stenosis.

aorta on the left side, or the vertebral artery from the subclavian, have been visualized and treated. However, unless angiography is used early, such lesions may not be localized before irreparable damage has been done to the brain. Furthermore, if the blood supply is restored after irreparable damage has been done to the brain, no improvement may result.

It should also be emphasized that the mere finding of abnormalities in these larger vessels does not necessarily imply that they are the cause of the difficulty that the patient may experience. It has long been known that a carotid artery on the one or the other side may be ligated in the treatment of certain aneurysms of the brain. Many of these patients carry on without difficulty and are able to cerebrate quite normally on the basis of the blood supply from the basilar and the one carotid artery. In such cases, the use of compression tests may still give syncopal effect when the good artery is compressed. With such an effect, however, it is not proper to diagnose insufficiency, but rather to point out that such a patient has grossly inadequate blood supply when the remaining carotid artery is also obstructed by digital pressure. In the presence of partial or complete occlusion due to an atheroma, if compression of the opposite carotid results in no syncope, it is a good indication that the collateral circulation, in spite of a partial

or complete occlusion, is adequate. Removal of such a partial or complete occlusion may not necessarily be curative, but it could be preventative in that such a procedure makes it possible for the patient to have another blood channel available for the supply to the brain. In this sense, the removal of the atheroma may be classified as preventative medicine properly utilized to prevent the possible occurrence of a cerebrovascular incident later.

LUMBAR PUNCTURE

Lumbar puncture is an important technical aid in the differential diagnosis of cerebrovascular disease. The presence of blood in the cerebrospinal fluid, its concentration, presence of yellow supernatant fluid after centrifugation indicate hemorrhagic lesions. A clear cerebrospinal fluid favors occlusive disease but not necessarily so since in some cases deep seated hemorrhagic changes may be unassociated with a bloody cerebrospinal fluid. Special spinal fluid determinations including total protein, sugar, chlorides, serologic tests and transaminase and other special studies may be indicated under certain circumstances. Bloody cerebrospinal fluid may be due to hypertensive encephalopathy, extensive areas of infarction, ruptured aneurysms, arteriovenous malformations, angiomata, or due to a fall (traumatic) resulting from giddiness, or syncope associated with cerebrovascular disease. Occasionally there may be a combination of pathological conditions, such as co-existing brain tumor and cerebral hemorrhage.

VENTRICULO-ENCEPHALOGRAPHY

In some instances, ventriculography or pneumoencephalography may be indicated in order to visualize a mass lesion in portions of the head not properly demonstrated by angiography. Generally speaking this study should follow angiographic investigation.

CONCLUSIONS

When confronted by an apoplectic form of cerebrovascular disease, aside from a careful history and physical examination, x-rays of the skull, electroencephalogram, electrocardiogram, carotid compression test, ophthalmodynamometry, lumbar puncture, and angiography are indicated. Angiography may disclose a mass lesion which may be amenable to surgical intervention. In some instances a differential diagnosis may necessitate the use of ventriculo-encephalography.

In the episodic or recurrent form of cerebrovascular disease, careful evaluation should include carotid compression test, ophthalmodynamometry, angiography, and ventriculo-encephalography where indicated. It is this class of patients who may have a partial occlusion of one of the larger vessels in the neck supplying the brain. These patients may be benefited by surgical intervention or anticoagulant therapy.

In the progressive form of cerebrovascular disease, careful studies are indicated in order to differentiate the condition from mass lesions and to institute treatment which may be otherwise unnecessarily postponed.

Improvement in a patient with the apoplectic form of cerebrovascular disease, in our opinion, is not a contraindication to careful diagnostic study. A partial lesion or a condition amenable to surgical therapy may be uncovered which, if treated, may prevent the occurrence of another attack later on.

It should be emphasized that episodic focal attacks may also be caused by mass lesions of the nervous system, certain inflammatory and degenerative diseases of the brain. Careful study of such cases may uncover many examples of treatable surgical conditions.

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PSYCHOPATHOLOGY OF ACUTE INTERMITTENT PORPHYRIA: CASE REPORT

ALFONSO PAREDES, M.D.[1] AND HARRY JONES, M.D.

The recent development of the psychotomimetic drugs such as LSD-25, has aroused interest in the study of artificially induced psychoses. Psychoses are also chemically induced in association with certain metabolic disorders. Studies of the latter phenomenon are, we believe, of great value. This paper invites attention to the psychological manifestations of acute intermittent porphyria, a metabolic disorder, characterized by excessive excretion of uroporphyrin and porphobilinogen in the urine.

Markovitz (9) reviewed 69 cases of this disease reported in the literature including five of his own, and estimated that three-fourths of these patients presented psychiatric symptomatology. The psychological manifestations of the disease are as protean as the physical, and include the widest variety of psychiatric syndromes, such as anxiety, hysteria, conversion reaction, depression and schizophrenia. Some subjects present only neurotic symptoms, while others develop frank psychotic manifestations which may progress to stupor, coma and death. Furthermore, a given patient may pass through all these stages. Periods of complete remission of the psychotic symptoms are common but never permanent. In general, the mental symptoms follow the course of the metabolic disturbance. Psychiatric disorders associated with porphyria have been unknowingly treated with ECT, intensive psychotherapy and tranquilizing drugs.

The problem of premorbid personality has never been systematically approached, probably due to the rarity of the disease. Nevertheless, it has been noted that patients frequently present a long history of maladjustment. One must here be cautious in the use of the term "premorbid" since it is possible, if not probable, that a metabolic defect exists long before symptoms bring the individual to the doctor's attention. Some patients complain of unsatisfactory marital relationships, such as lack of sex desire, dyspareunia in women, fear of intercourse, etc. An "hysterical" type of personality is at times conspicuous. Later in the premorbid history, the patient may become apathetic, neglect his occupation and withdraw from society (10).

With the onset of the disease, the "premorbid" psychopathology may become exaggerated. At first, there may be only irritability, the patient becoming quarrelsome and demanding. Anxiety may appear (13), and fluctuations of mood may be prominent. Patients react in peculiar ways to the abdominal and lumbar pain which is so commonly present. The attending physician may feel that the patient is over-reacting or dramatizing his response to the pain, and he may find that the pain is relieved by a placebo (6). Consequently, the diagnosis of hysteria is often made initially. Personal conflicts already existing may become more pronounced. A woman who had been somewhat concerned about the use of contraceptives became morbidly preoccupied with this problem when she became ill with porphyria (11).

Rather elaborate neurotic pictures have been described (11). Schneck (12) tells of a patient who experienced anxiety in crowds, and whose anxiety symptoms became more pronounced as the metabolic disorder progressed. It is, of course, never pos-

[1] Department of Psychiatry, Neurology and Behavioral Sciences, University of Oklahoma Medical Center, Oklahoma City, Oklahoma. This paper was presented at The Regional Research Conference of the American Psychiatric Association, Little Rock, Arkansas, March, 1959.

sible to be sure that such a change in a mental symptom is directly related to a concurrent metabolic change. Bizarre physical complaints are frequently reported, such as weakness, dizziness, throbbing sensations in the head, feelings of "needles running through my skin", etc. (6). Many patients present primarily affective symptoms. Depression may occur, with delusions of unworthiness and sin. Crying spells, suicidal ideas, and even suicidal attempts have been reported. Elation is evidently not a common symptom.

Intellectual function may be strikingly impaired. Sometimes the speech is irrelevant and incoherent (3). One patient began to write peculiar letters, and continually made bizarre to-and-fro movements of her arms and hands (5).

Delusional ideation takes various forms. Ideas of reference may be present in which some patients complain of feeling as though people are laughing at them. One woman confessed to having committed certain sexual misdemeanors, felt that she could never be forgiven for her sin, and spoke of being crucified (5). One of Roth's patients (11) felt that men at her place of employment were teasing her with notes about childbirth. She also thought she had cancer of the stomach, that she was the Mother of God, and that she was possessed by the Devil. Another patient heard the voices of relatives over the radio. The patients may be found conversing with themselves, or perhaps with imaginary people.

Of special interest is the occurrence of symptoms which we prefer to call catatonic, rather than "akinetic mutism." For example, a patient held herself in a rigid position with her right arm raised in a catatonic pose (5). Another hid under the bed and refused to communicate with people.

The more severely ill patient may manifest confusion, distractibility, relative unawareness of his surroundings, disorientation, and drowsiness, which may progress to stupor and coma. Symptoms of sensorium deficit are not reported as often as one would expect, considering that this is an organic syndrome.

Very little has been written on the results of psychological tests in patients with this disease. Olmstead's patient (10) was given the Wechsler-Bellevue, TAT and Bender-Gestalt; the results indicated a "strongly neurotic personality pattern with some evidence of homosexual conflict and no evidence of organicity." In the subject reported by Vicher and Aldrich (14), testing revealed "an individual who used passivity to control his life." In Cross's patient (4), the psychologist reported, "conversion hysteria, with phobias and depression in an immature, narcissistic woman." Levy and Perry's patient (8) had an I.Q. of 96, and the MMPI revealed no pathological traits. It is surprising that none of these patients were found to have test evidence of "organicity."

CASE REPORT

History. The subject is a 21 year old white male who was in good health until November, 1957, when he became acutely ill with severe abdominal pain. The diagnosis of porphyria was made by urinary studies. He remained ill for about five months, during which time, in association with severe bouts of pain, he experienced vivid dream-like states in which he would believe himself to be hunting. He returned to work in April, 1958, and except for occasional bouts of mild abdominal pain, he had no further difficulty. He left home to work on a pipeline in Alabama on August 6, 1958, two days after attending his brother's wedding. He worked without difficulty until August 26, when he suddenly became acutely ill again with severe abdominal pain. He was hospitalized for three days in Alabama before being brought home by car. During this period, though in considerable pain, the patient apparently evidenced no alteration of his mental state. On returning home, he was hospitalized for three days before being transferred to the University of Oklahoma

Hospital. While at his local hospital, according to his mother, he was in an almost continuously delirious state. He would speak and act as though he were working on a pipeline, yet he was not violent and did not have to be restrained. He could easily be aroused, responded appropriately to questions, and could recognize visitors.

There was no history of previous serious illnesses, operations, injuries or personality disturbances.

The patient is the second of four siblings, the eldest sibling being a half-sister. He was born and raised in a small Oklahoma town. When he was six years old, his three year old sister became ill with poliomyelitis and had severe paralytic sequelae. The family gave up the farm and moved to Oklahoma City in order to provide adequate medical facilities for the crippled child. After three years they moved back to this original community where they have remained.

The patient considered his childhood and adolescence happy, and he evidently enjoyed a warm and secure family life. He always had many friends and considered himself successful socially, athletically and scholastically. He was an excellent student, making almost all A grades. He had planned to attend college and to study engineering after finishing high school, but was unable to do so because of financial problems. Since finishing school three years ago, he has worked at various manual labor jobs, such as construction work.

Sexual development has been uneventful. Since the age of 16 he has had several normal heterosexual experiences.

Except for the younger sister, now crippled as a result of poliomyelitis, there have been no serious physical or mental illnesses in the family. There have been no symptoms of porphyria in the family members; however, shortly after his admission to this hospital, his brother's urine was found to contain abnormal quantities of porphobilinogen.

Physical examination. At the time of admission physical examination revealed a blood pressure of 130/80, pulse 96, and respirations 18. The examination was completely unremarkable. During bouts of abdominal pain, the abdomen was diffusely tender. The neurological examination was negative except for increased neuromuscular irritability.

Pertinent laboratory data included the following: Hemoglobin, 16.0 gms; White blood count, 10,800 with a normal differential count. The urine was dark brownish-red and strongly positive for porphobilinogen and qualitatively negative for coproporphyrin and uroporphyrin. There was a 3 plus urinary protein and the microscopic examination of the urine was negative. Spinal fluid was normal except for a protein of 50 mgs %. BUN was 41 mgms % on admission, but returned to normal range within a few days. Cephalin flocculation was 2 plus after 24 hours and 3 plus after 48 hours. BSP retention was 17%. Other liver function tests, including Van den Bergh, thymol turbidity, alkaline phosphatase and total serum protein and A/G ratio were normal.

Psychiatric examination. The patient was seen on four occasions in interviews lasting 30 to 60 minutes. On all occasions, he was lying in bed and seemed to be fairly comfortable. He shared a room with another young man. He was a good looking, rather dark skinned Caucasian of about 20. He was polite and friendly, but quite restrained in relating to the examiner. He answered questions and obeyed commands agreeably, but did not elaborate on his answers. He was quite alert and aware of his surroundings. He exhibited no unusual motor activity or mannerisms. Facial expression was somewhat restricted, although he occasionally smiled or laughed at appropriate times, but quickly returned to his somewhat immobile expression. His speech varied from day to day, being normal at times, having a slurred quality at other times. His words ran together so that the interviewer had difficulty in understanding him. His mood was

one of contentment, and he seemed to be enjoying the attention he was getting. In relating his hallucinatory experiences, he would often laugh as an expression of mixed amazement and embarrassment. Feelings of hostility, anxiety and depression were not perceived by the examiner. Thought progression was coherent, logical and goal-directed, but the patient had to be encouraged to fill in important gaps in his narrative.

At the time of the formal examination, the patient exhibited no delusions or hallucinations; however, he was able to remember and describe his hallucinatory experiences, which had occurred at other times. On the night before the initial interview, the examiner observed the patient during one of his delirious episodes. He would lie quietly for long periods, eyes opened, and seemingly preoccupied. He could correctly answer questions indicating good orientation, but periodically he would suddenly sit up and attempt to get out of bed, stating on one occasion, "I'm going to that concessions stand over there," pointing out into the vacant hallway. While he could not be reassured about the falsity of his perception, he was easily restrained, and would quickly show his contact with reality by responding correctly and appropriately to questions.

During the formal interviews, at a time when the patient was feeling quite well, he described these experiences as seeming very real to him, as though he were actually at the scene of a pipeline project. He could plainly see the equipment, the terrain and the other workers. At the same time he was also aware of being in the hospital, and could identify people standing at his bedside. He stated it was like a dream, except that it occurred when awake and was more real than a dream.

There was a gross deficit of intellectual function, which could easily have been missed without formal testing. Although recent and remote memory for personal events was fairly good, his handling of numerical and mathematical concepts were strikingly impaired for a man who had graduated from high school with superior grades. For example, he gave as the population of the United States, "66 million thousand," and as the population of Oklahoma, "8 or 9 billion." At a later time, he gave as the population of the United States, "two million," and of Oklahoma, "ten billion." He could repeat eight numbers forward with only one error, but was consistently unable to repeat backward more than two numbers. Serial subtractions of seven from one hundred was completely erratic: (100, 93, 83, 87, 71, 68, 51, 48, 38, 21, 18, and 6). The patient was read a story and was able to explain correctly the general point of the story, but could not remember details.

The patient was asked to reproduce abstract drawings similar to those used in the Bender-Gestalt test. He was also instructed to draw a map of the United States and of Oklahoma, and to show the locations of the major cities. All his drawings revealed a very significant defect in spatial orientation with omission of important details. We would interpret his reproductions as indicating strong evidence of "organicity." On the MMPI, the patient performed quite adequately, demonstrating a good understanding of the questions. While all his scores fell within the normal range, there was a conspicuously high peak on the "hysteria" scale.

DISCUSSION

The literature on the psychiatric manifestations of acute intermittent porphyria emphasizes the marked variability of the symptomatology (2). The patient may present neurotic, affective, or schizophrenic-like symptoms. Each patient apparently reacts in a different way to a more or less similar metabolic disturbance. This may be related at least in part to variations in the severity of the metabolic disturbance; but perhaps of greater importance are the individual's previous personality pattern, life

situation, and current psychological stresses (15). Remissions of the psychopathologic picture coincide roughly with the periods of metabolic improvement. This provides a unique opportunity for psychodynamic and psychopathological study, rarely encountered in patients with so-called "functional neuroses and psychoses."

The main areas of psychological disturbance in the present case were those of perception and sensorium. The former were manifested by the patient's belief that he was in situations which had at some time been gratifying. This is not unlike some dreams reported by children. The disorder of sensorium was revealed in his pathological performance on formal testing. Our patient differs from most of those recorded in the literature in that there was no previous history of neurotic symptoms or personality disturbance. A fact of some pertinence to the practice of hospital psychiatry was incidentally noted in this case. The nursing personnel were unusually tolerant of the patient's disturbed behavior. Perhaps the reason for this was that they knew they were dealing with a patient having an "interesting" metabolic disturbance. Like many physicians, they seemed to excuse the patient for disturbed or bizarre behavior so long as it could be related to some demonstrable structural or chemical abnormality.

In conclusion, this paper illustrates an approach to the understanding of psychiatric symptomatology which we feel has heretofore been neglected and which promises to be fruitful. We plan to extend our studies to include psychiatric syndromes associated with a variety of other diseases and clinical states, such as Cushing's Disease, thyrotoxicosis, uremia, acute pancreatitis and various infectious diseases. It is felt that studies of this kind will not only yield valuable data which will add to the understanding of psychopathology, but will also be useful in clinical management.

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FURTHER REMARKS ON PORPHYRIA AND REPORT OF PROLONGED OBSERVATION OF A CASE

NATHAN ROTH, M.D.,[1] IRVING FRIEDMAN, M.D. AND ROSA TOMSICH, M.D.

This communication reports the observations of a case of porphyria over a period of sixteen years. The data are considered worthy of transmittal for two reasons. First, the natural history of the disease, as learned from long term observation, is not as yet well enough known. Second, it appears that the psychiatrist has his particular obligation to clarify certain components of the syndrome, a consideration which it is hoped will be adequately elucidated below.

The patient who is the subject of this report was first commented on by one of the authors in a previous communication (11), when she had been under medical observation for a shorter period of time. She now illustrates very well the relentless tyranny of the disease and the ineffectiveness of present-day therapeutics to halt its sad progress.

As the medical, and particularly the neuropsychiatric, literature on the subject of porphyria has accumulated over the years, a point of view has appeared which seems to gloss over one of the fundamental components of the disease picture. Emphasis has been placed on the anatomico-pathologic changes as observed in the nervous system in cases of fatal outcome or in patients in whom biopsies have been done, and it has been assumed that these consequences of the metabolic disorder are to be held accountable for *all* of the psychiatric phenomena of the syndrome. As soon as the diagnosis of porphyria is definitely made and it is clear that an "organic" disorder is being dealt with, the previously entertained diagnoses of functional psychiatric entities, such as hysteria, are rather regularly discarded with the apparently captious assumption that they were assuredly erroneous. We submit that this procedure does not provide for a proper appreciation of the psychiatric components of the disease. The diagnosis of hysteria is made on the basis of substantial facts whose presence is not negated by the simultaneous existence of a metabolic disorder, even when or if both diseases contribute to the pathogenesis of the same signs and symptoms in a given case.

When porphyria brings about its now well recognized pathologic changes in the central nervous system (1, 2, 6, 7, 9, 12), it causes paralyses, amaurosis, convulsions, papilledema, increased intracranial pressure, etc., and from the psychiatric point of view, psychoses of organic reaction type. But when these patients are examined before the onset of organic cerebral changes, the psychiatric findings point to the diagnosis of hysteria with a surprisingly high frequency. This observation was recorded in our earlier study, and additional opportunities for collection of data have provided further corroboration. The occurrence of porphyria in individuals of hysterical personality structure is too common to be mere coincidence; whether the concurrence of the two disorders is so consistently true as to admit of almost no exceptions cannot be stated at this time, but it can be declared that the hysterical personality is apparently the premorbid and predisposing soil upon which the disease of porphyria springs up, and should properly be included as part of the syndrome of the latter. Indeed, in any case of hysteria, whether of the conversion or anxiety type, the additional possibility of porphyria should spring to mind, caution being exercised with regard to the point that the absence of porphyrinuria does not immediately exclude the diagnosis.

[1] Psychiatric Division of Bellevue Hospital, New York, N.Y.

In our earlier report (11) the following statement was made. "The disease occurs with special frequency, if not exclusively, amongst people with severe, neurotic personality disorders. The patients usually appear to be hysterical, except in those instances where organic brain disease clouds the underlying features of the personality. It is probable that the psychoneurosis plays an important part in the pathogenesis of the disease, and in determining the time of onset of the acute attack". Despite the corroboration afforded by large numbers of cases appearing in the literature in which patients with porphyria were considered to be hysterical both before and after the diagnosis of porphyria was reached (4, 10), the importance of hysteria as a component of the syndrome of porphyria continues to be minimized (5, 8).

The occurrence of porphyria in patients with hysteria raises many interesting questions for investigation. Can it be that clinically discernible disturbance of porphyrin metabolism is a somatic result of severe hysteria (in individuals with the latent metabolic defect), possibly as a consequence of the sexual repression in that disorder? The answers to such a question will come from more detailed information regarding the pathophysiologic effects of neuroses. But the simultaneous existence of the two disorders cannot be devoid of significance, and promises to throw further light on the nature of both. Thus the acute intermittent form of porphyria has been termed by Calvy (3) "the simulator," "because of the tendency of the clinical features to mimic those of other disease states. . . ." So porphyria takes its place, beside syphilis and hysteria, as a great imitator of other diseases, but now the suspicion arises that part of the capacity of hysteria to mimic other disorders is due to the simultaneous existence of undiagnosed porphyria.

The long term observation of cases of porphyria provokes emphasis on the consideration that familiarity with the protean nature of the clinical syndrome is rewarding, since the diagnosis can be made without the pathognomonic biochemical findings in the urine. The present case was first reported in 1945 as a case of porphyria without porphyrinuria; it took years before the presence of porphyrins in the urine could be detected. It was useful in the extreme, however, for this patient to have been given the correct diagnosis of her disorder early in its course. More studies are needed of the type reported by Visher and Aldrich (13) who have shown the effect of intensive psychotherapy in a case of acute intermittent porphyria, in whom "an apparent relationship between coproporphyrin output in the urine and emotional strain was noted," and "a similar response to emotional stress and to psychotherapy in a 28-year-old woman with acute intermittent porphyria and hysterical manifestations." Prolonged psychotherapeutic investigation will tend to corroborate or disprove such hypotheses as were raised above as to the relationship between porphyria and hysteria. At present there is no means of predicting with accuracy either the appearance of abnormal pigments in the urine, nor the time of onset or remission of clinical signs and symptoms; they are not correlated with each other temporally. It may be that both the clinical and biochemical alterations in the course of the disease are determined by the vicissitudes of the patient's emotional life.

CASE REPORT

Our earliest contact with this patient was recorded (11) as follows.

"The patient was an 18-year-old, white female who was brought to Bellevue Psychiatric Hospital on September 20, 1942, from another hospital, after she had expressed suicidal threats. During the preceding few months the patient had been admitted to several hospitals on many occasions, because of essentially similar attacks of acute illness. She would suddenly fall to the ground, stating that she was un-

able to stand or walk, and at the same time would become completely blind. The blindness lasted from several hours to some days. She complained of pain in the lower abdomen and lumbar region of the back, often accompanied by nausea and vomiting. She was constipated and had marked strangury and urinary retention, so that catheterization had frequently been necessary. She stated that on several occasions her urine had been of a red color.

"The patient's emotional life was a turbulent one, replete with chronic dissatisfaction. She was the youngest of three daughters, and got along very poorly with her parents and siblings. She felt that her social activities had been too rigidly restricted by her parents, and deeply resented the corporal punishment inflicted on her by them as late as her eighteenth year. She was blamed for her father's annually recurring asthmatic attacks. In order to escape the disagreeable home situation, she secretly married, in April, 1942, a man 12 years her senior. Since he was about to enter the armed forces, she continued to live with her parents, who did not learn of the marriage until informed of it some months later by a friend of the patient. At first she was frightened by sexual relations. She stated she knew nothing of the role of the male in procreation until she was 16 years of age, at which time she began her studies of biology in high school.

"Thorough physical examination, laboratory and x-ray investigation revealed no organic abnormalities. During her prolonged period of observation in the hospital, the patient was often blind for varying periods of time, but no abnormality of the eyes could be detected on examination. An electroencephalographic tracing, taken with right and left occipital leads, showed that the alpha activity recorded when the eyes were closed, was replaced, when the eyes were opened, by irregular, disorganized wave forms with occasional fragments of alpha activity. It was apparent, therefore, that the occipital cortex responded to visual stimuli, although the patient was not consciously aware of a perceptual experience. Neurologic examination revealed two other factors of importance. On some occasions, the deep reflexes were found to be diminished, except for the ankle jerks, which were quite active. Our experience with other cases has led us to consider this a significant sign of porphyria. In addition, the patient was unable to distinguish letters and numbers written on her skin, which was apparently a functional disturbance.

"The course of this patient's illness has now been followed for two years, and at no time have porphyrins been detected in the urine, although carefully searched for. The clinical picture continues unchanged.

"Although no one can doubt that there are hysterical manifestations in this case, her chief complaints were those which constitute the clinical syndrome of porphyria without porphyrinuria."

The patient's life has been occupied by her illness to a very large extent since the diagnosis of porphyria was first made in 1942, and it has been possible to trace no fewer than twenty-five hospital admissions during the years between her first entry into Bellevue Hospital in 1942 and her second admission to that institution in 1958. She has been able to carry four pregnancies to term and to give birth to viable children in 1943, 1945, 1946 and 1950. Between the first and second children she had a spontaneous abortion during an acute attack of porphyria. Each of the pregnancies brought about an exacerbation of porphyria, and during the third she underwent laparotomy with the removal of the appendix which was found to be normal. She has had to devote so much of her time to the hospital treatment of her disease, that her children all had to be placed in a welfare agency shortly after birth, to be brought home when they were older and could be cared for by the patient's husband and a housekeeper. Some of her other medical and surgical experiences were as follows. In 1950 she had

thrombophlebitis in both lower limbs and pulmonary embolism; she underwent bilateral femoral vein ligation. In the latter part of 1950 she also underwent cholecystectomy. In 1953, after prolonged metrorrhagia, a panhysterectomy was carried out; the diagnoses of chronic cystic endocervicitis, hyperplastic endometrium and myomata uteri were made. When she experienced precordial pain, electrocardiographic tracings were found to be normal, but she was given digitalis for some months. During all these years, with the more or less constant presence of pain in the abdomen and extremities, she has become addicted to demerol.

She was readmitted to Bellevue Hospital on January 19, 1958, and the record of her illness can be brought up to date with the most recent findings. Her present attack began with nausea, vomiting, abdominal distention and severe obstipation. For about a year she has been unable to pass urine voluntarily; at first she suffered from retention of urine, which changed to overflow incontinence about four months prior to this latest hospital admission; she now requires an indwelling catheter. She reports that on numerous occasions in recent years her urine has had a red color. Approximately one year ago the weakness of her lower limbs, which had been continuously present since the original onset of the illness and which frequently caused her to fall, became more severe and a right foot drop made its appearance. There has been a progression of the weakness in the right lower limb until she now has no power for movement at the right ankle and knee joints and very little at the right hip. After her latest hospital admission she also developed a left foot drop; except for this development there has been little change in her condition over a period of three months. The abdominal complaints remain unchanged, despite treatment by versenate and other means, she is unable to take food by mouth, and requires intravenous and subcutaneous nutrition.

On physical examination the outstanding finding was the marked abdominal distention due to paralytic ileus. The abnormal findings on neurologic examination, in addition to the paralysis of the urinary bladder with incontinence, consisted of motor weakness in the lower limbs. The patient had bilateral foot drop with flexion contractures of the toes. In addition there is paralysis of the entire musculature of the right lower limb, with some spasticity of the muscles in this extremity, so that the ankle and knee joints are fixed in extension. There is a small degree of atrophy of the muscles of the right calf. The deep reflexes appear normal in the upper limbs, but are absent in both lower limbs; there are no reflexes indicating damage to the pyramidal tracts. There are no trustworthy evidences of sensory impairment.

Several times in recent years during her periods in hospitals, she has had episodes of apnea for which she was placed in a respirator for varying periods of time. On some occasions when having such respiratory difficulty, it was found that, if she was distracted by conversation, the apnea passed off.

Psychiatric examination of the patient reveals her mental status to have remained relatively unchanged since the time of the original examination. She is generally emotionally unstable, demanding a great deal of attention, pleading for help and to have her wishes fulfilled, but is often rather uncooperative when requests are made of her. Any effort to elicit information about the sexual aspects of her marriage provokes an emotional storm, with refusal on the part of the patient to say more than that her sexual attitudes and experiences are "normal." There is no evidence on psychiatric or neurologic examination of organic cerebral pathologic changes due to porphyria, and these findings have been confirmed by the results of projective psychological tests. In all respects the patient's personality conforms to the pattern of the hysteric.

X-ray of the abdomen showed distention

of the large and small bowel by gas. The urine was generally found to be dark amber in color; on two occasions the Schwartz-Watson test was positive for porphobilinogen. Zinc in the urine was 0.04 mg. per cent (normal being 0.02 to 1.5 mg. per cent). Hemoglobin was 12.5 grams per 100 c.c.; white blood cell counts on different occasions were 5,500, 3,600 and 7,500 cells per cu. mm.; differential counts were normal. Fasting blood sugar was 93 mg. per cent. Blood urea nitrogen was 12 mg. per cent.

The condition of the patient's second child, a girl now thirteen years of age, is of considerable interest. This child is described as very temperamental and has been losing weight. She has had episodes of photophobia, abdominal distention and cramps, which were considered by the family physician to be part of the girl's neurosis; she was given phenobarbital and this was followed by an aggravation of her complaints. The Schwartz-Watson test done on the girl's urine on two occasions gave equivocal results, but it is probable that she has latent porphyria.

COMMENT

Greater familiarity with the clinical syndrome of porphyria and with the course of the disease, which has been accumulating in recent years, indicates the necessity, particularly for the psychiatrist, of being able to make the diagnosis in the early stages of the condition and without having to wait for the pathognomonic urinary findings. Porphyria without porphyrinuria is a diagnosis which, under certain conditions, can be made with confidence, as the present case shows; the appearance of the porphyrins in the urine is too fluctuating a matter for the clinician to make this the *sine qua non* of the diagnosis.

Because of the occurrence of porphyria in patients with hysteria, these cases often make their way first to the psychiatrist, and properly so. We would submit that the psychiatrist who is not alert to the possibility of the coincidence of the two diseases, whenever he is confronted by a case of hysteria, is in a dangerous position. Sudden death in respiratory failure is not unusual in porphyria. In one of the cases (Case 4) in our earlier report, the sister of our patient, while undergoing psychotherapy, suddenly died in what was presumably an attack of porphyria. The psychiatrist who is treating a case of hysteria must protect his patient and himself by being aware of the possible simultaneous existence of porphyria, so that he may be forewarned of the possibility of sudden severe, and psychologically unexplainable, symptoms and signs as well as the contingency of sudden death.

SUMMARY

The findings in a case of porphyria, sixteen years after the diagnosis was first made, have been detailed.

The frequent coincidence of porphyria and hysteria, with the possible significance of this relationship, has been discussed.

Some additional psychiatric considerations in porphyria have been appended to those of our earlier communication on this subject.

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BRIEF COMMUNICATION

CYANIDE ENCEPHALOPATHY PRODUCED BY INTRAVENOUS ROUTE

SEYMOUR LEVINE, M.D.[1] AND EUGENE J. WENK, M.A.

The cerebral pathology caused by experimental cyanide intoxication is of great interest because there is often sufficient selectivity for white matter to suggest an analogy with the demyelinating diseases of man. Previous workers have stressed the necessity for repeated injections of potassium cyanide in order to damage white matter (3, 4, 6). The experiments reported here show that a single half-hour treatment with the same agent, potassium cyanide, given intravenously, can produce similar brain lesions.

Repeated injections of potassium cyanide, often involving many months of treatments with progressively increasing doses, have produced brain damage with considerable selectivity for white matter in the monkey, dog, cat and rabbit (reviewed in references 4 and 5). The instances of cerebral damage following *single* doses of cyanide showed localization in gray matter, except for a very few cases in which the white matter was damaged selectively or in association with gray matter (1, 3). These considerations led Hurst to postulate that repetition of anoxic injury was required in order to damage the white matter (4).

Lumsden's work with rats conformed to this principle, as a prolonged series of potassium cyanide injections caused selective lesions of the white matter of the corpus callosum and hippocampal commissure (6). This author proposed that cyanide did not act directly, but that repeated episodes of histotoxic anoxia caused the liberation of a myelinolytic agent from the white matter.

However, Hicks showed that intraperitoneal injections of sodium cyanide, repeated as soon as the rat showed signs of recovery, produced lesions of white and/or gray matter in as short a period as a few hours (2). White matter was damaged in corpus callosum, corpus striatum and optic tract, and gray matter was damaged in cerebral cortex, corpus striatum, hippocampus, substantia nigra and cerebellum. Finally, the factor of repetition was eliminated completely in experiments reported from this laboratory in which cerebral damage was produced in high incidence by a single exposure to hydrogen cyanide (5). Rats were brought to a nearly lethal degree of intoxication after breathing hydrogen cyanide for about ten minutes, and this state was maintained for an additional 15–30 minutes. The areas damaged included all those described by Hicks, plus ventral hippocampal commissure, anterior commissure, and thalamus. The most frequent lesions showed selective damage to white matter of striatum and/or callosum.

The high incidence of brain and especially white matter lesions following single exposures to hydrogen cyanide was attributed to use of the respiratory route which permitted moment-by-moment control of the depth of intoxication, minimizing the occurrence of inadequate or excessive dosage. In contrast, the curve of action following injections of cyanide salts is uncontrollable, and though the intoxication may reach the desired sublethal level, there is no way to maintain it at the optimal level sufficiently long (15–30 minutes) to achieve brain damage.

However, there remained the possibilities

[1] Department of Pathology, St. Francis Hospital, Jersey City, New Jersey. This investigation was supported wholly by Grant No. 184-1 from the National Multiple Sclerosis Society.

that hydrogen cyanide had some unique property not shared by cyanide salts, or that the respiratory route had some advantage over other parenteral routes besides that mentioned above. Therefore, an attempt was made to produce brain lesions by a continuous intravenous injection of potassium cyanide, a method which also permitted moment-by-moment control of the depth of intoxication. The results have validated the concept that the production of cyanide encephalopathy depends on the *maintenance* of an optimal cyanide level for a certain period of time, and provide additional evidence that repetition is not a prerequisite for selective damage to white matter.

METHODS

Female 250 gram albino rats were used. Under ether anesthesia, an external jugular or femoral vein was cannulated toward the heart with a polyethylene tube (I.D. 0.28 mm) which was tied in place. The incision was closed and the rat kept under restraint, usually on its back. As soon as it showed signs of recovery from the anesthetic, potassium cyanide (0.01–0.05% in normal saline, neutralized with citric acid) was injected slowly. The injection was stopped when the animal became unconscious and showed no motion, no response to pinching the tail, or no conjunctival reflex. Respirations were slow, deep and regular. The condition of the rat approximated that previously described as *stage three* (5). Small increments of potassium cyanide were given intermittently or whenever the rat showed any activity, so as to maintain the intoxication for periods up to 50 minutes. In some experiments, the rats were exposed to a continuous flow of oxygen during the cyanide injection period.

The continuous intravenous method was technically more difficult than the hydrogen cyanide method. Although the response to increments of potassium cyanide was rapid, it was difficult to keep the rat at a constant level of deep intoxication and yet avoid a fatality. The method was not adaptable to handling groups of animals simultaneously. A single worker could handle only one rat at a time, and even a team of two workers could handle only three or four animals together. In contrast, the hydrogen cyanide technique permitted a single worker to expose six rats simultaneously, and it did not involve preliminary operative procedures. The advantages of the continuous intravenous method were that it permitted the determination of the total dosage administered, and it made possible simultaneous administration of cyanide and oxygen, an experiment not attempted with hydrogen cyanide because of the theoretical possibility of producing an explosive mixture.

The rats were sacrificed two to eight days after the cyanide treatment. The entire brains were fixed, cut in coronal slices and examined histologically. Only definite, destructive lesions were scored as positive. Minor or questionable changes were scored as negative.

RESULTS

Twenty-eight rats survived the continuous intravenous injection of potassium cyanide. An equal number died during or immediately after the procedure and were not studied further. The fatalities were due to overdosage, and were particularly related to excessive speed of administration. Twelve of the twenty-eight survivors had no lesions, but this figure is not an index of the efficiency of the method as it includes the earliest attempts with relatively brief treatments.

Sixteen of the survivors had brain lesions which were identical in type, localization and extent with those seen after hydrogen cyanide (5). The incidence of lesions in different structures (Table 1) showed the same tendency toward selective involvement of white matter of callosum and striatum. Nevertheless, areas of gray matter were damaged in a few rats.

The pattern was essentially the same

TABLE 1

The Distribution of Lesions in Certain Areas of the Brain Following Continuous Intravenous Potassium Cyanide, Without Oxygen (7 rats) and With Oxygen (9 rats)

	Number of Rats With Lesions	
	Without Oxygen: N = 7	With Oxygen: N = 9
Callosum	7	5
Striatum, white	4	4
Striatum, gray	1	3
Cortex	1	3
Hippocampus	1	0
Thalamus	2	1
Nigra	1	1

whether or not oxygen was administered. The results showed that oxygen did not increase the selectivity for white matter; we do not draw any positive inference from minor differences in the distribution of lesions because in this small series they may be due to chance variation.

Lesions were produced in experiments varying from 28–62 minutes (average 43 minutes) in total duration. These rats were unconscious and unreactive for 25–50 minutes (average 34 minutes); shorter periods of unconsciousness gave negative results. The amount of potassium cyanide administered in successful experiments varied from 0.65 to 2.43 mgs (average 1.67 mgs); of these amounts from 0.30 to 1.5 mgs (average 0.96 mgs) were administered during the period of unconsciousness. Some experiments in which the duration and the amount of potassium cyanide fell within these ranges gave negative results. This may have been due to individual variation or to incorrect evaluation of the depth of intoxication.

DISCUSSION

Cyanide tends to cause selective damage to white matter, but gray matter is involved in some animals. Oxygen was administered in the hope that it might mitigate the cyanide effect on gray matter and thus increase the selectivity for white matter. This hope was based on the higher cytochrome oxidase content of gray matter, and the possibility that oxidative metabolism might be inhibited only partly in gray matter at levels of cyanide which cause complete inhibition in white matter. The results gave no evidence that oxygen was of value in this regard.

The lesions produced in rats by a single treatment with potassium cyanide were similar in type, distribution and incidence to those produced by hydrogen cyanide. Therefore, the production of white matter lesions by a single exposure to hydrogen cyanide did not depend on any unique property of that form of cyanide or of the respiratory route. Rather, it depended on the ability to maintain a deep level of intoxication for an adequate length of time. Repetition was not a prerequisite for producing selective white matter lesions. This evidence favors the concept that the action of cyanide on white matter is direct, rather than indirect by way of gradual release of destructive forces (4) or a myelinolytic agent (6) from the white matter. There appears to be a certain length of time during which the cyanide inhibition of oxidative metabolism can be tolerated, but if this time is exceeded, lesions are produced. It is possible that the critical point corresponds to the death of certain susceptible cells: neurons in the gray matter, probably oligodendroglia in the white matter.

SUMMARY

Rats that received a single intravenous treatment with potassium cyanide showed brain lesions entirely similar to those produced by a single exposure to hydrogen cyanide. The production of selective white matter lesions did not depend on repetitive cyanide treatments, but rather on maintenance of optimal depth and duration of intoxication. This evidence suggests that the effect of cyanide on white matter is direct rather than indirect. Concomitant administration of oxygen did not influence the results.

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BOOK REVIEWS

NEUSTATTER, W. LINDESAY. *The Mind of the Murderer*. Philosophical Library, New York, 1957. vii + 232 pp. $6.00

Because of the fascination that murder holds for nearly everyone, this volume makes interesting reading. It is written in a rather chatty style and cannot be considered a major scientific contribution. The book has no index and lacks bibliographic references. The latter are greatly missed, particularly when the author makes such categorical statements as "the brain uses 85 per cent of the body's energy." Many of England's most famous recent murderers are discussed, among them: Christie, Heath, Haigh, and Straffen. The last case discussed by the author is the famous Copenhagen case of Nielson and Hardrup, in which the former was held responsible for having forced his confederate to commit murders, as the result of post-hypnotic suggestion. The case presentations are, unfortunately, quite superficial. Much reliance is placed on police reports, basic dynamics are rarely discussed and clinical psychological studies are totally neglected. The book gives interesting glimpses into the English attitudes toward psychopathy, diminished responsibility, the McNaghten Rules, and capital punishment.

Manfred S. Guttmacher

KRANTZ, JOHN C. AND CARR, C. JELLEFF. *The Pharmacologic Principles of Medical Practice*. 4th ed. The Williams and Wilkins Co., Baltimore, 1958. xi + 1313 pp., illus. $14.00

This is the fourth edition of a well known text which already has been translated into several languages. Several changes have been made including the addition of two new chapters dealing with the "Use of Drugs in the Treatment of Mental Illness" and "The Local Use of Drugs in the Ear, Eye, Nose and Throat." Other sections have been expanded and new discussion has been included, for example, of the action of drugs at the enzyme level.

Most texts in this and related fields nowadays seem to be growing into intellectually and physically unwieldy reference works. Drs. Krantz and Carr have been able to cope very well with this problem. Although this is by no means a "pocket edition," it has been held down to reasonable size. As with the previous editions it is well written and presents the subject matter from the point of view of practical usefulness based on clear concepts whenever possible. In other words, the student and general practitioner will find the book very well worth having at hand, not only as a background aid, but as a practical tool in assessing the value and usefulness of new drugs.

Robert G. Grenell

BECKER, H. AND BOSKOFF, A., EDS. *Modern Sociological Theory in Continuity and Change*. Dryden Press, New York, 1957. xii + 756 pp. $6.50

This is a collection of twenty-five original essays by noted sociological authorities on numerous diverse, and occasionally overlapping, facets of contemporary sociological theory and theoretically oriented research. In their preface the editors give as their aim, that of presenting the reader with a balanced depiction of modern sociological theory which would both substantively clarify important theoretical and methodological issues, as well as informatively delineate the historical precedents and contexts whence such issues have arisen and undergone conceptual modification. In this their contributors have as a whole served them somewhat less faithfully than may have been wished; certain of the essays, rich and thorough from the historical standpoint, tend to circumvent sharp discussion and analysis of theoretical matters *qua* theory, while others

in their haste to engage the ideational core relegate the developmental criterion to little more than a tedious chronology of "leading works and their authors." Few of the contributions score equally high on both counts, and a small number pass on neither. In fairness, though, it must be granted that for the editors to have fully realized their laudable aim would have probably necessitated a book at least twice the length of what is already a very lengthy volume.

The book is divided into five parts, Part I being an apt and well-documented introduction by co-editor Alvin Boskoff on the historical social thought background of modern sociology. Part II, "Major Strands in Theory and Methodology," contains several contributions of a high order of inquiry, that by Walter Buckley on "Structural-Functional Analysis in Modern Sociology" coming closest in this reviewer's opinion to the editors' standard of a balanced historical-analytical survey of an area. In his cogent review, Buckley not only teases out and illuminates the epistemological and methodological traps that await the sometimes brash structural-functionalist or his even more daring brother—the equilibrium model builder, but also delivers his judgments with a lucidity and sense for logical exposition rarely encountered in disquisitions of this sort. By contrast, the otherwise thoughtful piece by William L. Kolb on 'The Changing Prominence of Values in Modern Sociological Theory' is marred by a tortuousness of presentation which makes comprehension difficult at more than a few points. Some may also seriously question the heuristic utility of Kolb's reduction of the traditional concept of values (*i.e.*, relatively abstract goals, ideals and end-states which are culturally defined as desirable, commendable or morally right) to a level at which it is equated with the normatively influenced choice behaviors of specific individuals. Actually, in this reader's opinion, a more salient, if somewhat less explicit, discussion of the values concept in sociology is to be found in Howard Becker's far ranging and imaginative (though at times eccentrically phrased) inquiry on "Current Sacred-Secular Theory," an area in which Becker has long been the leading authority. In another peice by Boskoff (Social Change) there are proposed some long needed linkages between thinking on how and why societies change and the main stream of sociological theorizing on social structure, organization and function.

In Part III ("Some Specializations in Modern Sociology") Don Martindale offers a succinct and useful analysis of theory in the area of "Social Disorganization." His failure, however, to relate the discussion sufficiently to recent conceptualizations of social deviancy, particularly as these have developed in the fields of criminology and mental illness, detracts from essay's relevance. Most disappointing is Hugh D. Duncan's contribution on the "Sociology of Art, Literature and Music." Too brief to cover any single aspect of this complex realm adequately, an inordinate amount of space is given over to a somewhat contrived and unconvincing typology of social structural relations between artist, critic and public. An almost total neglect of the considerable body of research and theory on the role of the mass media in contemporary art and popular culture, further vitiates the value of this contribution.

Readers of JNMD will be especially interested in the piece by Gisela J. Hinkle on "Sociology and Psychoanalysis" included in Part IV ("Convergences of Bordering Fields with Sociology"). Hers is a first rate historical account of the sometimes disdainful, sometimes flirtatious, but nearly always strained intellectual relations between the two disciplines on the American scene, from the time of the initial Freudian impact at the turn of the century down to the mid-fifties. Unfortunately, the excellent narrative account of ideas and their partisans is not matched by an equally sophisticated or penetrating discussion of the under-

lying confusion of theoretical perspectives and levels of generalization which have often caused spokesmen for the two disciplines to talk past each other, each tending in the growing heat of disputation to reach toward a doctrinaire determinism. While the important work of Talcott Parsons is mentioned by Hinkle in this connection, interested students are advised to turn to Parsons' own writings for greater clarification on these matters. Also, and possibly due in part to the date at which her contribution was written (1955), Hinkle overlooks recent theoretical and research advances in social psychiatry by such men as Stanton and Schwartz, Hollingshead and Redlich, Caudill, Spiegel and M. Jones, this being perhaps the foremost area in which sociology and psychoanalysis are effecting a highly fruitful and more firmly rooted liaison of interests and outlook than they had previously.

A concluding section (Part V) of this qualitatively mixed, possibly overambitious, but nevertheless worthwhile and important compendium, is devoted to 'Sociological Research and Theory Abroad' with representative contributions from Britain, France, Germany, Italy and Japan.

Fred Davis

LANGE-EICHBAUM, WILHELM. *Genie, Irrsinn und Ruhm.* 4th ed., (revised by Wolfram Kurth). Ernst Reinhardt, Munich/Basel, 1956. 628 pp.

It is with amazement and at times perplexity that one attempts to review a new edition of Lange-Eichbaum's classic. The present volume represents not only the feat of bringing the material and the sources up to date but also further amplification of Lange-Eichbaum's premise to regard the problem of "genius" a sociologic rather than a problem of personality alone. The extent and the devotion to which this has been carried inspires awe. The authors submit studies in psychology, history, sociology and psychopathology in a correlative fashion. One may question individual points of view or some of their epicritical analyses but one finds oneself almost always hopelessly on the side of the less universally informed. This goes for the pathographies as well as for the theoretical discussion and evaluations.

It is obvious that such an attempt of encompassing as wide a field must convey an impression of "encyclopedism," rather than eclecticism. On the other hand the editor has succeeded in preserving the original author's emotional investment and temperament in the subject of genius. If multidisciplinary approach in psychiatry means more than a research method or a pragmatic slogan, Lange-Eichbaum's work should be on the shelf of any psychiatric reference library.

Klaus W. Berblinger

MICHAL-SMITH, HAROLD. *The Mentally Retarded Patient.* J. B. Lippincott, Philadelphia, 1956. 215 pp. $4.00

Dr. Michal-Smith's stated purpose in writing this text is to provide the interested physician with an understanding of the mental retardate. In terms of this purpose, several flaws must be noted. It would seem to this reviewer that much of the "technical" information supplied is at once too much over-simplified, if not inaccurate. For example, the extremely uninformative statement is made, "... we know that in the act of learning a circuit is formed within the nervous system between the point of stimulation and the response, and that this circuit ... is a physiologic energy conductor" (p. 11). Such information is either well known and accepted, or is held in disrepute by others. In any event, it scarcely needs repeating to a professional audience. In discussing etiology, the author wonders why intelligent people would rule out heredity as a cause of deficiency in favor of emotional blocking and environmental deprivation. He states this approach is detrimental to research. This assumes: a) there are

research workers who don't "believe" in heredity, b) hypotheses generated by a genetic-hereditary theory have proved fruitful in gaining a greater understanding of familial retardation.

There are a number of positive values to cite in connection with this volume. The chapter on "Attitude Toward Prevention and Etiology" is thought-provoking, as is the chapter that deals with the history of psychological work with deficiency. All those who work with mental retardates can only praise Dr. Michal-Smith's plea for more understanding of defectives and for more active professional interest in the subject. It is unfortunate that this book was not designed for the interested lay public. It has a high potential in that direction.

Gerald Wiener

FELDMAN, SANDOR S. *Mannerisms of Speech and Gestures in Everyday Life.* International Universities Press, New York, 1959. xvii + 301 pp. $5.00

The author of this book was among the oldest coworkers of Ferenczi and has been known in the psychoanalytic movement for more than forty years. He presents here, as he states, the results of observations made on certain phenomena of speech and gestures, noticeable when people communicate with each other.

The term "mannerism" has been chosen by the author because the phenomena under investigation are observable in our everyday life. However, he concedes in several places that the term "behavior pattern" would be the more adequate one. The clinical examples which he uses to demonstrate mannerisms of speech are chosen largely from analytic sessions and not from everyday life. For that reason, the source of the repeated choice of phrases by the patient belongs to the analytic situation. Their interpretation is well founded in many respects, since the author's aim is not to categorize people according to their speech mannerisms, but to show the hidden motives behind them, regardless of the category of classification into which the patient using such mannerisms would fall.

The role which the so-called "false" superego plays in these verbal stereotypes seems to be over-rated by the author. This is apparently due to his concept of a struggle between a "false" and a "true" superego. That the dominance of a false superego which disturbs the emotional balance should be the main source of these "mannerisms," needs clarification which is missing in the book.

Whereas the verbal stereotypes exemplified in this volume are mostly analytic observations, the chapter on gestures and all kinds of bodily movements which accompany, augment, or substitute for speech, are taken from everyday life and only occasionally from observations during the analytical hour. They are, therefore, in the main, surface studies of expressive movements and their interpretations are not analytically founded. It may be that the author had not intended to pursue them from this point of view, which would have required longitudinal, analytical studies of motor behavior, and a more thorough acquaintance with the literature.

In any case, one must agree with the author that these findings of the mannerisms and gestures, which are so richly illustrated in this book, will rekindle the hope that from these observations a universally valid educational therapy may gradually develop. The fulfillment of this hope, which several authors in the psychoanalytic field had expressed before, seems to be overdue.

Felix Deutsch

SELYE, HANS. *The Chemical Prevention of Cardiac Necroses.* Ronald Press, New York, 1958. ix + 235 pp., illus. $7.50

In this monograph, Hans Selye presents many original observations concerning the complex relationships between electrolytes, steroids, and stress. Rats had been found to develop fatal cardiac necroses followed by

myocarditis when simultaneously treated with normally innoxious amounts of various corticoids and certain sodium salts. This stimulated the extensive experiments reported in this monograph. An additional object of the monograph is to coordinate the many isolated clinical and experimental observations on cardiac necrosis in the world literature in the light of the more newly acquired knowledge about the electrolyte-steroid-cardiopathies.

The common features of the cardiac lesions reported are that they are characterized by focal necrosis with invasion of the damaged muscle tissue by inflammatory cells. Unlike the true cardiac infarct, this necrosis is not due to acute vascular obstruction but presumably to bio-chemical changes in the myocardium.

Described in detail are the lesions and experimental techniques utilized in producing both the electrolyte-steroid-cardiopathy characterized by hyalinization in the walls of coronary arteries and the myocardium itself; and electrolyte-steroid-cardiopathy characterized by necrosis. Both are induced after sensitization with corticoids, the first by an excess of NaCl and the second by excessive Na_2HPO_4, or $NaClO_4$. Both KCl and $MgCl_2$ were found to exert a protective effect in the development of these cardiopathies. The lesion which developed revealed a gradual transition from degeneration of fiber segments to individual fibronecrosis and the eventual development of larger necrotic foci.

The data as reported are extensive, impressive, and confined to rats. There remains the need to demonstrate applicability of these experimental conclusions at the human level. Selye states, "It is difficult to foretell which among the spontaneous cardiac diseases of man are most likely to be prevented or improved by KCl and $MgCl_2$." He compares the similarity of the induced lesions in rats with several myocardial lesions in man, and raises the hope that KCl or $MgCl_2$ will have protective effects in man.

This is a provocative publication. The data are clearly presented and experimental results lead the authors to sweeping conclusions and suggested applications in man. It remains for other laboratories to confirm these observations and to extend them to other animals besides the rat. Although the application of these results remains to be determined, the author does suggest that clinical trials are indicated. This monograph should prove of value as a source book because of its extensive bibliography and carefully and originally conceived index. It is recommended to experimental workers in the field of electrolyte-steroid-cardiopathy relationships.

Leonard Scherlis

PARNELL, R. W. *Behavior and Physique.* Edward Arnold Ltd., London, 1958. viii + 134 pp. $7.00.

The publication, in 1940, of the *Varieties of Human Physique* occasioned a fairly moderate stir. By expressing body-build as a continuous trivariant system, W. H. Sheldon forged well beyond discrete types, and opened the way to quantifiable relationships between physique and such variables as age at maturity, occupational selection, predilection to coronary-artery disease, and the facility (when young) for getting into trouble with the law.

There are, however, numerous limitations to the somatotype system as originally described by Sheldon. Though the ratings can be highly replicable, one may question what the ratings actually mean. Sheldonian "endomorphy," clearly a fat factor, is as likely to be the result of generous nurture as a product of genetic nature. It is not known whether adequate age-corrections are built into the original system, based, as it may be recalled, on collegiate samples. For these reasons there are numerous modifications of the somatotype procedure, all confusingly sailing under the same label, and

all designed to simplify, objectify or improve the method of 1940.

Dr. R. W. Parnell, who has been working in constitutional medicine for over a decade, is among the many modifiers. Using fat-fold calipers, bone-joint anthropometry, circumferences and standard-score charts (incorporating some age-corrections) his system, "intended to correspond as closely as possible with Sheldon's estimate of somatotype," is certainly more objective in operation, though again based on University-male samplings and a seven-point trivariant scale. Despite system differences such as those Emanuel found in comparing Hooton-Stagg and Dupertuis ratings of the same army subjects, Parnell's approach and Sheldon's must correlate highly; trends obvious in one system should appear in the other.

Some of Parnell's findings, summarizing a huge amount of investigative work, and pictured on 44 "somatocharts," will scarcely astound a waiting world. As contrasted with 2063 Oxford-Birmingham students, "Mr. Universe" contest winners are extreme mesomorphs, physical education trainees less so, athletic Oxonians more mesomorphic than honors winners and so on down the line. Body-build and choice of faculty are related in much the same fashion in Birmingham, as Seltzer found at Harvard. Interestingly, children tend to approximate the mid-parent in physique, as with Galton's 1888 data on stature, and men rarely marry women who can out-wrestle them. These latter comments are not tongue-in-cheek on the part of the reviewer: data on physique inheritance in man is needed, and factors (other than stature) that upset the assumption of random mating also need clarification. Besides, marriage counselors do have to consider whether fat-lady, thin-man combinations are likely to work, and whether with an adequate ego a male can accept a sexual partner who far exceeds his muscular ability.

Further relating behavior to physique, Parnell's British findings pan numerous nuggets, although national differences in nosology confuse the picture. "Anxious" boys are more linear than the average, so are "meticulous" girls. Boys with low I.Q. ratings are predominantly muscular (somatochart 24), Oxford students under psychiatric care are drawn from the lean ones, as are patients committed to psychiatric hospitals early in life. One may summarize the findings by saying that with advancing age (in Great Britain, at least), physique ceases to differentiate the psychiatric admittee: linears become emotionally more stable with time, Parnell suggests, but at least three other hypotheses fit the same facts. For one thing, people normally become fatter, too.

To a very large extent this slim volume remains purely descriptive, and studiously avoids attempts at explanation. This may be British empiricism, a contrast to the American penchant for riding the horns of an hypothesis. It may be Parnell's desire to avoid biological determinism. With so many physique-behavior associations demonstrated, one can hardly hope for a simple explanation that covers them all. Except for the very obvious relationships between physique and muscle-bound occupations, there is now a surplus of data and a paucity of explanations. Granted that currently different disease categories differ in physique, why, and what experiments do the data suggest, if any?

Parnell does append a few pages of tabular material presenting the standard deviations (though ignoring skewness), the NPQ test, and the tetrachoric r. He does not concern himself with sampling and social stratification in particular, wherein some of the differences found unquestionably lie. Granted that psychotics, neurotics, the anxiety-prone and cricket-players all differ from each other in modal physique, this does not necessarily confirm physique-disease relationships or prove that the one has a direct bearing on the other. The associa-

tion between linearity and early psychotic behavior now has the same status as the relationships between night air and malaria a century ago. There is an association, but it is by no means clear as to why.

Stanley M. Garn

FEIN, RASHI. *Economics of Mental Illness.* Basic Books, New York, 1958. xx + 164 pp. $3.00

This second volume of the monograph series of the Joint Commission on Mental Illness and Health is, appropriately, written by an economist. Perhaps because it is a trail-blazing work and for the first time attempts to apply documentary evidence to make cost estimates, it will at times seem pedantic and pedestrian to the reader who is used to having statements regarding this subject couched in flamboyant propaganda rather than in terms of sober scientific study. Fein has made every effort to be just to the facts, sometimes to the extent of being very conservative. For example, it is a little hard to understand the reason for the discounting of future earnings, treating them as though they were a capital investment whereas actually they have a restored, new value each year. On the other hand, the conservatism of the estimates for earnings of women seems fully justified even though it must be galling for housewives to find their work has no money value; perhaps it is actually priceless.

Fein concludes that the addition of lost tax money on the probable earnings of a mentally ill person who might otherwise be earning is unjustified as a procedure in arriving at the cost of mental illness to the population. The point may certainly be agreed but the conservative position is defensible.

It is a little disappointing to find almost no new data in this book. Nothing seems to have been produced *de novo* for this study; it is merely a series of careful computations on available figures. As such, and because it makes explicit a great many valuable and critical issues, it is an excellent reference work which will certainly be used a great deal and will be a restraint on any wild and over-inflated estimates in the near future.

One of the most outstanding particular facts is that small proportion of the cost of caring for the mentally ill that is spent for out-patient services. The Veterans Administration, for example, while spending a total of $768 million, in 1956, spent but $5 million on out-patient services. This sort of terribly distorted proportion indicates where expenditures are lagging very badly. In the Veterans Administration total expenditures, about $580 million are for compensation payments. Fein does not deduct these from probable earnings of these patients if they were well, a procedure that seems questionable to the reviewer who, however, is not an economist. It is consistent, however, that neither does he deduct any estimated amount for welfare payments to families of hospitalized patients. While both these amounts enter the national economy as cash present because of mental illness, both are also costs in terms of the taxpayer. Fein prefers to use the one as cost and finds the other too difficult to estimate, presumably, to enter the calculation at all.

This is a useful book. It should have a salutary effect on a field in which economics has been too slow to be applied.

Paul V. Lemkau

GALT, WILLIAM E., ED. *A Search for Man's Sanity* (The Selected Letters of Trigant Burrow). Oxford University Press, New York, 1958. xxi + 615 pp. $8.75

This volume contains examples of Trigant Burrow's voluminous correspondence with a wide range of people: wife, children, friends, coworkers, students, other scientists in many fields, other psychoanalysts, noted figures from the arts, even a stuttering taxi-driver to whom he offered advice about treatment.

The letters, arranged chronologically, be-

gin with one written in 1902 to the girl whom he was to marry (while he was still a graduate student at Johns Hopkins University), and ends with one written to his co-worker and son-in-law, Dr. Hans Syz, in 1950, just ten days before his death at age seventy-four. They convey the impression of a devoted man: devoted to family, co-workers, friends, and to the pursuit of those professional interests with which his name is associated. He also was a man interested in literature, the theater, and art, in nature, and travel.

But most of all he was interested in people. After his medical training at Johns Hopkins University and his later graduate work in psychology, he worked with Adolf Meyer, Jung, and was on the staff of the Phipps Clinic until 1927, while also being active in psychoanalytic practice in Baltimore. In 1927 he moved to New York City, and later lived in Connecticut.

He was a charter member of the American Psychoanalytic Society, but rather early in his career veered away from traditional Freudian theory—he said that his theories were an extension of the Freudian theories. Out of his studies there developed group analysis,—in which all participants analyzed themselves and each other, living and working together,—some for years. He concluded that the whole of society suffered from a mass neurosis, the result of the interference with primitive and total emotional reactions by "partitive" reactions deriving from the acquisition of speech. He named his science "phylobiology," and its methods "phyloanalysis." Subsequent investigations sought (and found, he thought) vestigial remains of this interference in tension phenomena about the eyes and related to varying types of attention. His late years were devoted to the effort to document these findings by the modern electronic recording devices.

His was a life devoted to the development of the contents, limits, and methods of phylobiology, and he suffered much at the hands of fellow scientists who could not agree on the merits of his claims and theories. With a band of devoted co-workers, he organized a non-profit research institute, the Lifwynn Foundation, which still operates at Westport, Connecticut.

Several noted literary figures were receptive to his views, among them Sir Herbert Read, D. H. Lawrence, Leo Stein and Sherwood Anderson, but the degree of his direct influence on them is debatable.

His impact on the psychiatric scene was not great during his lifetime, I would judge from his own complaints. But he got a better hearing from sociologists, and it is possible that his contribution to modern "social psychiatry" will be considered important.

The letters are arranged to cover developing periods in his life and are strung together with biographical insertions. They read easily in contrast to the difficult style in his scientific works, of which he complains. Since the letters are all to others, and none from them to him are included, the reader is left to make inferences from time to time which may not be altogether valid. They leave much to be desired in presenting a full accounting of the decisive events in his professional life, particularly of the launching of his special brand of group analysis.

Wendell Muncie

KLOTZ, H. P., BOUVRY, M., ISRAEL, L., LUMBROSO, P., RAVERDY, P. AND METTE, G. *La Tetanie Chronique ou Spasmophilie.* L'Expansion Scientifique Française, Paris, 1958. 258 pp. illus. $3.70

This monograph, which deals with the multiple aspects of chronic tetany, represents an outgrowth of the senior author's long-standing interest in the clinical and metabolic aspects of spasmophilia. Dr. Klotz discusses authoritatively the problems of chronic tetany from the point of view of clinical signs, etiology, pathogenesis, and treatment. It is particularly illuminating to have this endocrinological problem presented by an author who is intimately ac-